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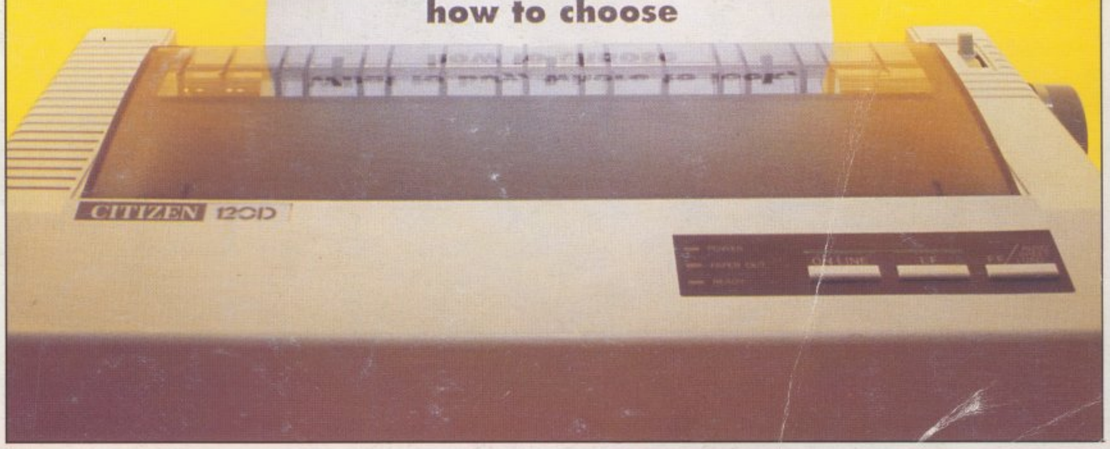
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SHOPPING LIST

This is an alphabetically sorted, quick-reference list to everything in the issue. Just look for the relevant name of the software, hardware or subject and it should be here. Some things are cross-referenced under more than one heading for ease of use.

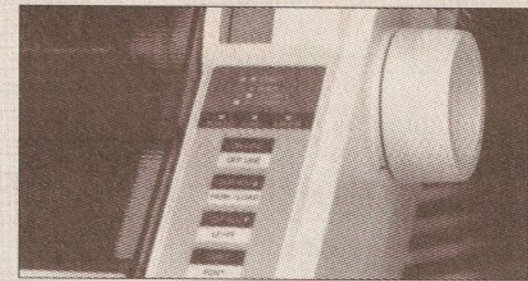
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COVER



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The idea of free software is great, but how do you sort the wheat from the chaff?
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£100 cut from Class pack

Buying Amigas for classroom use is now an even more attractive proposition as Commodore has made hefty £100 price cut to the Class of the 90s – First Steps package.

With over 17,000 packs sold at the old price of £599, the company hopes that at £499 the Amiga will become yet more 'affordable and accessible to schools' and sell in even greater quantities.

The contents of the package remain the same: an A500 with 1Mb of RAM, TV modulator, an introductory video and eight software titles including a word processor, a multimedia filing system, a spelling package and *Deluxe Paint II*. Commodore sees the pack as providing a link between computer-based learning in the home and classroom, describing it as 'ideal for children aged five and upwards'.

There has been speculation that the price drop is a response to Atari's bundling of the ST in an education package called The Family Curriculum which sells for £399. Commodore was keen to deny this, saying that the new price was in line with recent changes in pricing policy across the entire Amiga range. If anything, the company sees Atari's move as a 'tremendous compliment' to its own, longer standing educational initiative.

Editman offers video options

Syntronix Systems is offering several hardware and software products for advanced Amiga-based video production.

The Editman is an editing system which can control domestic VCRs and camcorders with an accuracy of a single frame. Insert and audio dub editing are available, and the system is mouse controlled. IFF files can be edited, and genlock support is offered. The Editman system normally costs £499 (exc. VAT), but is available for a limited period at £325.

Also on offer is a computer recording interface which enables Amiga graphics to be taped using the S-VHS or Hi8 systems, while avoiding the fuzziness which can result from using the composite video output. The company claims that the recording quality with the device exceeds that obtained using genlocks. The computer recording interface costs £249.

Finally Syntronix offers an RGB digitising interface. The hardware accepts S (Y/C) signals for maximum quality. A version is available which can grab frames in real time. The digitiser costs £199.95. Syntronix ☎ 0332 298422.

NEWSHOUNDS WANTED

We are always looking for Amiga related news stories, and we pay for the ones we print. Ring us on 0225 442244.

Confusion reigns over Kodak compatibility

CDTV takes your pictures

by Cliff Ramshaw

This time next year owners of CDTV should be able to view their family snaps on TV, according to an announcement from Commodore UK, but some confusion surrounds the subject.

Using a system devised by Kodak called Photo CD, people will be able to take their films along to High Street bureaux and have them transferred on to a CD. The cost will be approximately £10 for 24 35mm pictures. Since there is room for up to 100 stills on a single CD, the price of putting extra pictures on to the same disc will be substantially less.

There is, however, a degree of controversy, or at least confusion, as to exactly which of the current CD formats will be compatible with it.

Philips has developed the hardware of Photo CD in conjunction with Kodak, and says that its CD-I system will be compatible with the standard. As a response to this, Commodore seems to have decided that CDTV will be made compatible as well. This announcement surprised Kodak, however, with a spokesman claiming he was "amazed at what they [Commodore] are saying." He stated that no licensing agreements for Photo CD have been issued, and that the details of what such agreements would constitute are yet to be finalised. Neither, he added, have the technical specifications been released.

Kodak is trying to launch a world-wide standard with Photo CD, so it is obviously in the company's interest to license it out to as many third-party hardware manufacturers as possible. Even if no papers have been signed, it is certain that Commodore and Kodak have been talking.

Equally, Photo CD compatibility is seen as an important plus point by Commodore for CDTV. Steve Franklin, managing director of Commodore UK, said "CDTV is bringing the world of multimedia to consumers and compatibility with Photo CD will be a vital component in this movement."

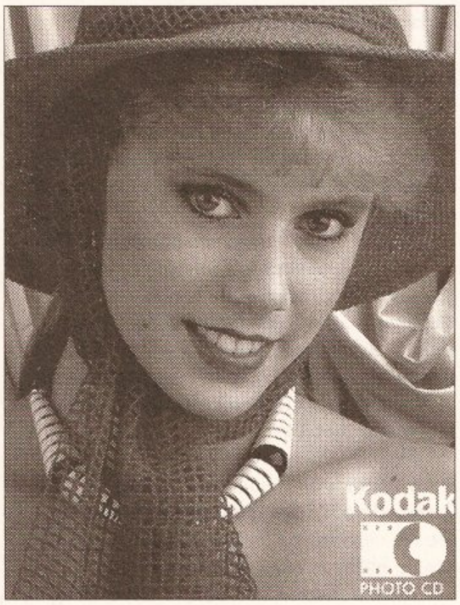


Photo CD: family snaps on a disc.

But this component is not quite in place. In response to allegations from Philips that CDTV simply does not have the technical capability neccessary to deal with Photo CD, Commodore's head of public relations, Andrew Ball, admitted that it may require a "little more than is currently in a CDTV box." This addition, which may be in the form of an upgrade or a plug-in smart card, will be necessary to give CDTV the 24-bit ,16-million colour display required by Photo CD. Because the hardware of the CDTV is based on an Amiga it is only capable of displaying 4,096 colours, not enough to display a truly photorealistic image.
Commodore UK ☎ 0627 770 088.

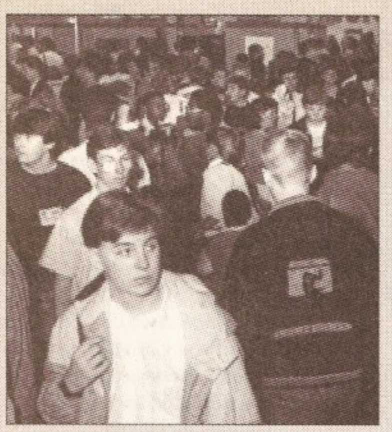
Buy one, get seven free!

A new deal is now available for users of *WordPerfect* in educational institutions. Seven licences will be given free with every copy bought, allowing seven copies of the software to be made and used around the site. Additional keyboard templates will be sent on receipt of a registration form from the users.

This scheme, which is endorsed by CHEST (the Combined Higher Education Software Team), replaces WordPerfect's previous, discount-based educational scheme, although the offer for individual purchases by student and staff still stands: a hefty discount of between 80 and 90 per cent. Interested individuals should contact the information services department of WordPerfect UK ☎ 0932 850 500.

Otherwise, copies of *WordPerfect* along with the licence agreement are available from the distributor, SDL ☎ 081 309 0300. Unfortunately, additional copies of the documentation have to be purchased separately. The manual costs £20; the tutorial-style *Work Book* costs £13.

WIN A PRINTER!
Turn to page 11 for details



Big crowds are expected for the 16-bit Computer Show.

16-bit show set for success

Computer junkies in their tens of thousands will be converging on Hammersmith, London on the 12th July for the International 16-Bit Computer Show. The show, which is the fourth of its kind, caters for Amiga, PC and ST users in areas ranging from home entertainment through to business.

The last show had some 21,000 visitors, with over 150 companies exhibiting. The organisers hope this one will be an even greater success. Already 160 companies from Europe and North America have booked space, and 50 new products are expected to be making an appearance. Attending companies include GFA Data Media, Pandaal, Surface UK and Precision Software.

As well as manufacturers, user groups and many computer suppliers will also be exhibiting. The show will provide an excellent opportunity to see the latest developments, try out intended purchases and buy.

The show will be held at the Novotel in Hammersmith. Entry on the door will cost £5, or advanced tickets for £3 can be purchased from the ticket hotline ☎ 0726 68020.

You can read a full report from the show in next month's *Amiga Shopper*.

Keep your computer clean with a sticky rug!

For users worried about dust invading their computer's delicate parts, Brown, Kemp & Company may just have the answer. Takmats come as a stack of tiles, each with an adhesive surface for collecting dust, and can be placed in dust-critical areas. When one layer is clogged up, it can be peeled away to leave another fresh sticky layer beneath.

The mats come in two forms. Super Dust Absorbency (or SDA) mats have 36 layers held in a strong surround. A 6-foot x 4-foot mat costs £77.87; a 4-foot x 4-foot mat costs £32.25. Alternatively, the Low Profile (LP) mats costs £171.55 for a pack of four, each with 30 layers. These are ideal for clean hard surfaces, and because, the company explains, they are so thin tea trolleys can pass over them with no jolting.

Takmats are distributed by Brown, Kemp & Company ☎ 081-858 8657.

'8-bit Amiga' being tested

Commodore has developed an upgraded C64 which bridges the gap between the 8-bit machine and the Amiga.

Given a working title of the C65, the machine has already been sent out to software developers for testing, although Commodore denies that it has any immediate plans to release it.

Like the C64, the new computer is based on the 6502 microprocessor but its graphics have been upgraded to be capable of displaying the 4,096 colours of the Amiga palette. Additionally, the C65 will be able to display standard Amiga IFF files, and with its 3.5-inch drive transferring graphics should present no problems.

Despite these compatibilities, the C65 firmly remains an 8-bit machine, and Commodore is keen to stress that it does not see the machine as an 8-bit Amiga, since it has no blitter or other specialist chips.

The machine will be able to run existing C64 software, although without a cassette interface or the C64's 5.25-inch disk drive, manufacturers will have to repackage their products. Given the difficulty Commodore has had persuading developers to support the C64's cartridge facility, the introduction of yet another format into the declining 8-bit market is unlikely to be greeted with enthusiasm, perhaps explaining Commodore's ambivalence about launching the machine.

Quoted in the trade journal *CTW*, Commodore's retail sales manager Kelly Sumner said: "It is a product which has been developed, but at the moment we have no plans to release it. We have a very good line-up and it would be ridiculous to bring in a product that would compete with the Amiga and C64. It will definitely not see the light of day this year."

However, Commodore has a policy of reviewing hardware product launches every six months, so there could be a change of heart after Christmas.

With any launch so far away, pricing is a matter of speculation, but informed sources claim that £199 would be an ideal level.

Tap into the tape

Deluxe Paint III is widely regarded as the best Amiga paint package available, but its wealth of features and thick manual have left many in a state of confusion. Now those people can get the best from this package with *The Deluxe Paint III Tutorial*, a video from Video One.

The video is aimed at those who already consider themselves familiar with *DPaint*, rather than the complete beginner. It covers topics such as smooth animation, text in perspective, marbling and shining chrome effects.

The video is available for £19.99 from Video One ☎ 041-552 7865, and is the first in a planned series of videos designed to help Amiga software users learn about how to use their equipment.

Stand-alone toaster pops up

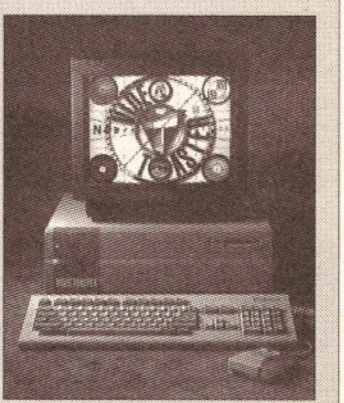
Already hailed as a revolution in video work in its Amiga peripheral incarnation, the Video Toaster is now available in the US as a stand-alone, desktop system.

Professional quality video effects such as overlays, fades and wipes can now be produced on a system costing $3,995. Equivalent systems, as used by MTV and American cable networks, cost in the region of $100,000.

The stand-alone Toaster is based around an Amiga 2000, with the addition of a 52Mb hard disk. Users will also need two composite video monitors, a video recorder with single frame recording ability (for the creation of 3D animations), and a Time Base Corrector for any video sources used.

As yet, there is no PAL version of the Video Toaster available for use in Europe, although it must only be a matter of time before NewTek becomes aware of the potential market size on this side of the Atlantic.

Amiga Shopper currently has a Video Toaster in its possession. Expect a review very soon. NewTek ☎ 010 1 913 354 1146.



The stand-alone Toaster. 'A revolution in video work'

Accessories make the CDTV into a computer

News is beginning to break of 'accessories' for Commodore's fashionable machine of the moment, the CDTV.

The Commodore Dynamic Total Vision, essentially a CD player linked to an Amiga 500 without the keyboard, is being marketed as a consumer product in no way connected with computers, hence the need to describe add-ons for it as accessories rather than peripherals.

The first of these accessories is likely to be an infra-red mouse which, because it has no tail, is being called the 'hamster'. Also in the pipeline is an infra-red trackerball (with joystick ports), and an infra-red keyboard (surprise, surprise). Prices have yet to be confirmed, but the products should be on the market by September.

In addition, Commodore hopes to release a networking system so that groups of CDTVs can be linked together for classroom use. CDTV users will be able to add genlocks to their machines, and credit-card sized memory wafers. The latter will have a capacity of up to 512K, either ROM or RAM, so they can be used both for holding application software and for saving user preferences, game positions and so on.

A floppy drive should also be available by the end of the year. With this and a keyboard, owners of CDTV will be able to use it just like an A500. A basic CDTV system costs £599. Adding a keyboard and disk drive will almost certainly add another £100 to the price. Since an A500 currently costs £329.99 and the price of a CDTV upgrade for the Amiga is expected to be around £300, buying a CDTV plus assorted infra-red goodies looks unlikely to be a cost-effective decision.

Commodore UK ☎ 0627 770 088.

Dentists learn the drill from an A3000

Amigas may soon help to lessen the pain of root canal fillings. An interactive presentation has been developed at the children's department of Kings College Dental Hospital to help undergraduates study the intricacies of root canal therapy without having to touch a patient.

The program, snappily entitled *Endodontics for the Deciduous Dentition* uses text, scanned pictures and X-rays, together with Amiga generated animation, diagrams and sound to teach students the techniques involved.

The developers of the system are Peta Smith and Andrew Gould, who hope it will become an invaluable teaching aid. The computer is being used alongside conventional lectures and demonstrations.

The system was put together on a 25MHz A3000, with JX-100 and JX-300 scanners and the Audio Engineer used for input. The software was prepared using *CanDo* from Innovatronics, *Deluxe Paint 3* and *The Art Department*.

Amiga raises money from hospital TV ads

by Karl Foster

An enterprising Amiga-based desktop video scheme has raised thousands of pounds for a Welsh hospital.

Since January this year patients at Morriston Hospital, Swansea, have been treated to local news and health programs by Morrivision, the hospital's voluntary television service.

The programs are put together with the help of an Amiga 2000, and profits made from advertising charges on the network are helping to boost the hospital's funds.

Morrivision member Norman Harris, who also runs the Swansea-based computer graphics company Galaxy Graphics, said the Amiga is the ideal tool for the job. "We use it mainly for its graphics capability and, for what we're doing, it works very well."

He said the machine comes in to its own when putting together TV adverts for local firms, for which the old stalwart paint package *DPaint III* is pressed into service, along with Innovision's video titling package *Broadcast Titler*.

Hardware-wise, Morrivision uses low-band U-Matic video and an A2000 plus 5Mb RAM with 40Mb Quantum hard drive, linked to a Rendale 8802 genlock.

Morrivision ☎ 0792 703437
Galaxy Graphics ☎ 0792 297660



A Welsh hospital is using an Amiga to produce graphics for its patients' television service. *Broadcast Titler* and *DPaint* create advertisements which pay for the channel.

Dataflyer hard disks take off

Trilogic has introduced a range of hard disk drive controllers and hard disks going under the banner of 'Dataflyers'.

The SCSI (Small Computer Systems Interface) controllers allow any hard disk which uses this industry-standard system to be attached to either an A500 or internally to an A2000 or A1500.

Trilogic supplies the controllers complete with NEC hard drives in capacities of 56Mb and 130Mb. The NEC drives have an access time of 25ms and a read/write speed of 1.5 megabits per second. All of the disks are auto-parking, and they have a slim 25mm profile.

All have a two year guarantee. Prices are £369.99 for the A500 56Mb drive, £599.99 for the A500 130Mb drive, £324 for the A2000 56Mb and £499.99 for the A2000 130Mb.

Trilogic ☎ 0274 691115

Pirates scuppered

The fight against software piracy continued apace this month with raids across the country. FAST, the Federation Against Software Theft, made 16 swoops on the unsuspecting buccaneers in the first week of June alone.

Some 9-10,000 leisure titles were seized, with 5,000 of these being taken during a single raid in Cardiff.

The rest of the haul was taken after impromptu visits made by FAST at Redcar races and in Humberside and South Wales.

DIARY DATES

July 12-14: 16-Bit Computer Show, Novotel, Hammersmith, London. Westminster Exhibitions ☎ 081-549 3444.

August 1: Next issue of *Amiga Shopper* in your newsagent.

September 5-8: European Computer Entertainment Show. Earls Court, London. EMAP ☎ 071-404 4844

Canon Correction

We would like to point out that in the news story last month, 'Still video moves in on the Amiga', there was an omission. In order to transfer pictures to an Amiga, the camera's disks have to be placed in an RV321 Player unit (costing £1,639.12) which is connected to the Amiga's serial port via an IAV32 Interface Unit (£464.12). The interface software costs £229.12 from Computerised Training Systems, ☎ 0724 281 037.

Amiga gets a helping hand

by Dave Golder

An Amiga-driven scale replica of a real industrial robot has been launched into the education market.

The Alfred Arm from Think Limited is a fully articulated robot arm just a couple of feet high which can emulate all the actions of the full sized Mars and R200 production line robots. It has six axes of movement, each of which can be individually controlled from the Amiga.

The accompanying software has been specially designed to make it as easy to learn as possible, using slider switches and bold icons. It allows you to build up simple programs, in a process called datalogging, to drive the arm through a continuous cycle of pre-set motions.

The company reckons that mastering the arm takes only a few minutes so that schoolkids do not spend ages just learning how to get it to move.



Amiga add-on automaton.

It is intended to be used in projects to help develop problem solving and analytical skills.

Priced at £360 for educational purchasers (or £399 to Joe Public) The Alfred Arm is, according to Think Limited's Ian Black, about one third of the price of similar robot packages that are currently available.

A conveyor belt (£230), rotary table (£150) and linear slide (£290), which can be controlled from the same software to work in conjunction with the Arm for more complex set-ups, are also available from the company.

The system will be released on other computers soon, but the company chose the Amiga as the machine on which to launch the Arm.

This decision followed a market survey commissioned by a large Norwegian training organisation. It predicted that there would be a demand for up to 4,000 of the robots a year in Europe if it were released for the Amiga, far more than any other computer.

Think Limited ☎ 021-384 4168.

Printer power

Prospective printer purchasers already confused by the plethora of options available will be pleased to here of another entering the market. The DL900 from Fujitsu is a 24-pin dot-matrix model, offering a column width of 110 characters (at 10 characters per inch) or 132 characters (at 12 cpi) at a resolution of 360x360 dots per inch.

The printer supports three emulation modes: Fujitsu DPL24C plus, IBM and Epson. As readers of Amiga Answers will be aware, this is a valuable asset. As further assurance that it will work with an Amiga, it is bundled with a number of printer drivers and a set-up program called *DLMENU*.

Fujitsu hopes the DL900 will aid its plans for expansion in the small computer market. To this end, the DL900 has been 'designed to fit the parameters of desktop use', presumably meaning that it will fit on a desk.

The Fujitsu DL900 will be distributed by Midwich Thame (☎ 0379 644 131) and Zygal Dynamic (☎ 0869 253 361) for a suggested price of £351.33.

Basic in your sites

Schools and universities using Amigas as part of their computer studies courses will now have the opportunity of obtaining site licences for *GFA Basic* (reviewed in Battle of the Basic, *Amiga Shopper* issue 3).

There are two deals available, either with or without manuals. After an initial purchase of the interpreter at the standard price of £50, ten further copies, including manuals, can be bought at 50 per cent discount. Any copies bought thereafter will be at 80 per cent discount.

Alternatively, by buying two copies (both with manuals) at the full price, an educational establishment will be able to buy a minimum of ten more (without manuals) at 90 per cent discount.

These deals, hopes GFA, will help establishments with 'ever reducing budgets' and an 'increasing demand for more advanced technology'. As a side line, it might also help to sell a few more copies of *GFA Basic*. GFA Data Media UK ☎ 0734 794941.

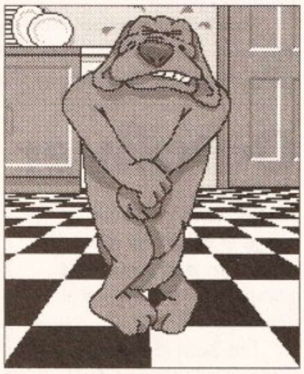
Prize for best animation

Prizes are once again up for grabs at this year's Animation Competition, organised by the Amiga Centre Scotland.

Sponsoring companies (as yet unspecified) will be offering hardware and software products to those who produce the most colourful, weird, wonderful and humourous entries.

As well as material gain, the winning entrants will have their work on display to the public as part of the Animation Exhibition. The exhibition will run from the 21st to the 28th of August, coinciding with the Edinburgh Festival. An additional feature of the exhibition will be an animation workshop where anyone can try their hand at animation.

The competition is open to all Amiga users, worldwide. Entries should be on floppy disk or PAL video tape, and accompanied by the entry form printed below.



One of the winners from last year's contest.

NAME: ....
ADDRESS: ....
....
....
TEL. NO: ....
FORMAT OF ENTRY
3.5-INCH FLOPPY DISK ☐ PAL VIDEO TAPE ☐
MODEL OF AMIGA ....
DETAILS OF PERIPHERALS ADDED ....
....
SOFTWARE USED ....
I AGREE TO ABIDE BY THE COMPETITION RULES

SIGNED ....DATE ....
The closing date for entries is 31 July. The Amiga Centre Scotland ☎ 031 557 4242.

Big screen

Amiga users involved with desktop publishing, software development and business will be interested in a new monitor from Hitachi. The 20MVX is a 20-inch, high-resolution (up to 1,280 pixels horizontally by 1,024 vertically) colour monitor costing £1,874.13.

It is mounted on a tilt and swivel base and has a flat, glare-resistant screen. It connects to an Amiga via a 9-pin D-sub cable which must be purchased from a third-party supplier. Note that if you wish to use the monitor to display interlaced graphics, then a flicker fixer of some description will be needed.

The monitor is available from Hitachi New Media ☎ 081-849 2092.

You deserve the best!

Now you can get the best... with PEN PAL!

A word processor with immense power to deal with most situations and... it includes a Database! It's all so easy to use, you probably won't need to refer to the extensive 250 page manual too often.

Whilst working, you can open up to four documents simultaneously (memory permitting), search and replace; cut, copy and paste; check your spelling with a 100,000+ word dictionary. You can import your favourite IFF/HAM graphics, from programs such as DPaint II or Clip Art, in various sizes and colours. You can automatically flow text around graphics in any Workbench compatible font (there are over 200 available styles), in different sizes and colours to suit your design... even as you type! All this from a word processor and Much Much More!

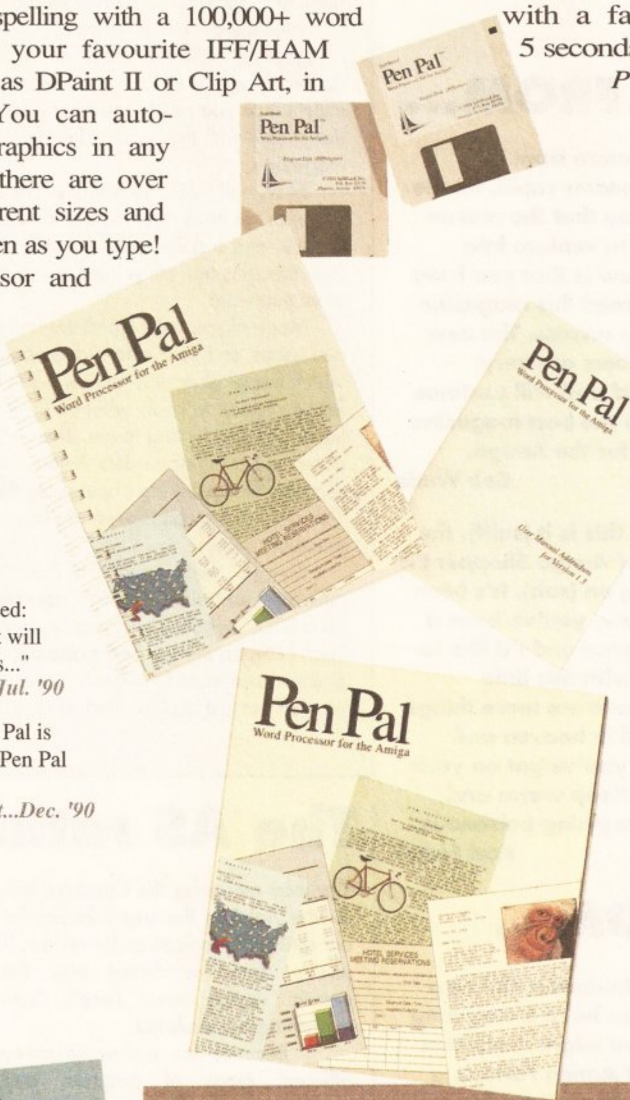
As you can see, this is not just any ordinary word processor! Full Page View with position, edit and creation of graphic objects. Mail Merge using the built in database and forms designer. Creation of templates for complex reports, into which the database can be merged. Operating with 32 fields per record, and 32,000 records per database with a fast sort of 1000 records in less than 5 seconds this is a *real* database.

Pen Pal requires an Amiga 500/1500/2000 or 3000 with a minimum of 1megabyte available memory.

Pen Pal

When...you deserve the best!

£79.95



."...its handling of graphics is unsurpassed: Pen Pal is the only program I tested that will automatically wrap text around graphics..."
Amiga World...Jul. '90

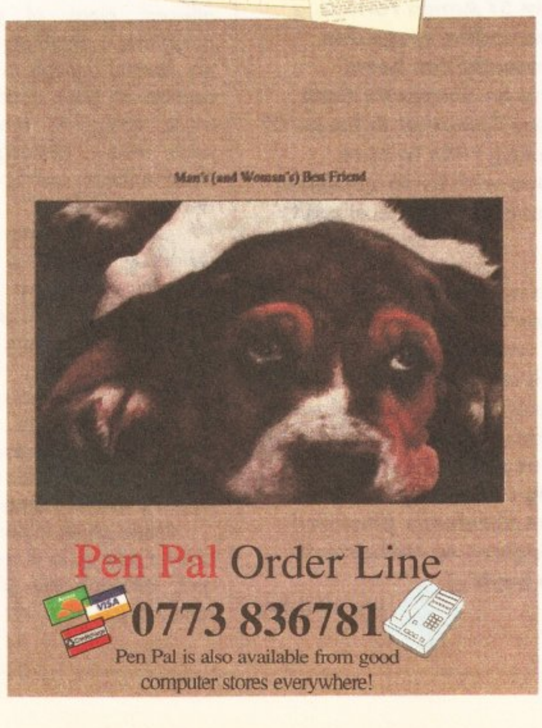
."..without beating around the bush Pen Pal is very special.." - "There is little to fault Pen Pal and it deserves to do well."
Amiga Format...Dec. '90

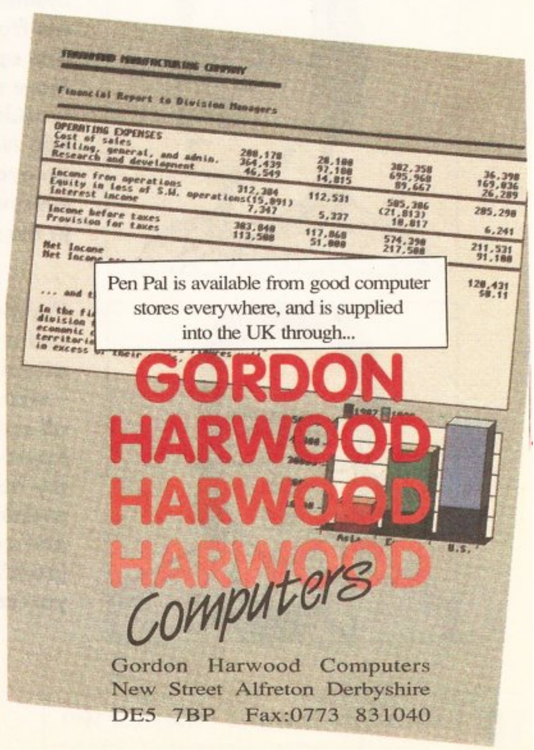
"...I am extremely pleased with your product especially the Graphic Capabilities within the Word Processor. Having the Database on the same disk has made PEN PAL the best program I have..." *D.S.B., Plumstead, LONDON*

"...Please let me tell you how amazed I am at how EASY IT IS TO USE PEN PAL. The manuals supplied are very informative and very clear..."
P.S.S., Clifton, NOTTINGHAM

"...A most excellent piece of software..."
E.P.H., Strathclyde, SCOTLAND







Gordon Harwood Computers
New Street Alfreton Derbyshire
DE5 7BP Fax:0773 831040

SAY HELLO, WAVE GOODBYE

We're making a few changes here at Amiga Shopper, with two new faces joining the team as two old faithfuls drift slowly into the sunset...

SO IT'S GOODBYE FROM...



If my departure from the magazine seems rapid, let me reassure you that the reason I'm happy to venture into pastures new is that you have already turned this magazine into a huge success. The new team members are very experienced and will continue to give you the best magazine anywhere for the Amiga.

Bob Wade



Well folks, this is it (sniff), the last issue of *Amiga Shopper* I'll be working on (sob). It's been a great show, you've been a great audience and I'd like to leave you with this little thought: there are more things to be found in heaven and Earth than you've got on your hard disk. Keep warm and don't eat anything poisonous.

Karl Foster

AND HELLO FROM...



I'm Stuart Anderton, the new editor. If you have a very long memory you might remember me from *ST Amiga Format*, a fine upstanding magazine. More recently I've been working on *Shopper*'s sister title *New Computer Express*. Of an evening I like to bore everyone with trivia questions in the pub, just like Bob really...

Stuart Anderton



I'm the new production editor, so I won't be doing much actual writing for the magazine – which is probably good for all concerned. Our contributors, however, will soon get used to my honeyed tones... Of an evening I like to ignore Stuart and get absolutely plastered (Boddingtons or Michelob, if you're buying).

Ian Wrigley

LETTER FROM THE NEW EDITOR

Dear readers,

First of all, a confession. I am not an Amiga expert. I know a fair bit about the machine, having worked on Amiga-related magazines since 1989, but when it comes down to it I know about as much as the average user. So why on earth, you might well ask, are you editing *Amiga Shopper*, Britain's premier magazine for people who are serious about their machines?

Well the answer is simple. An editor's job isn't to know lots about the Amiga; that's Cliff Ramshaw, our technical expert's department. My job is to do two things. First, to find out what you want from *Amiga Shopper*: what information you need, and how you want it presented. And second, to find the people with that knowledge, get it down on paper and out to you in the magazine.

Easy, eh? Well, no actually. The second part is simple enough; here at *Shopper* we have a comprehensive panel of experts in all areas of Amiga activity, and a skilled production team of Ian and Jaquie who can translate their thoughts into the printed word. It's the first bit that's difficult; finding out what you want.

Many of you were good enough to fill out the questionnaire in the first two issues, so I have a fair idea about how old you are on average, and which model of Amiga you own. But to really get *Amiga Shopper* working for you I need to know what you want, and that means you putting finger to keyboard and writing to me. This isn't an idle request; things really do get done as a result of readers' letters. For instance in the last week I had three separate letters asking about using the Amiga in amateur radio work. Therefore in the coming months you will find features on using the Amiga in amateur radio.

So if you want a series on Basic, or setting up a database for stamp collecting, or writing collision detection routines in assembler, or connecting up a MIDI keyboard or *anything*, get it down on paper and straight to me. Then I can do my job better and get a huge pay rise at the end of the year, and you can mould *Amiga Shopper* into the Amiga magazine you always wanted but just couldn't find. Get writing. *Stuart Anderton*

The AS ratings explained

You may recognise the Checkout box on the right as the usual format for our rating of products under review. If you've been wondering how the system works, then here's how everything is calculated.

Because we review so many different types of program and hardware, a single group of ratings is not flexible enough to assess all the aspects of each product. Thus the rating categories are different for each review, although things like Documentation and Speed will nearly always be there.

Another important aspect is the weighting given to each rating category to end up with the final mark out of 100. Price is one of the most important ratings, but others will vary considerably. For instance, compatibility accounts for many of the marks for a PC emulator and strength of construction or reliability will be a big score for mice and other accessories likely to take a beating.

Marks given in the Checkout box always add up to a value out of 100 and, although this is a somewhat artificial indicator of the quality of software or hardware, it does allow comparison between similar products. The thing to bear in mind is that we aren't dealing with games – a relatively low mark does not mean you shouldn't buy a product; it's a comparative indicator that takes into account many different factors. In all cases, you should base your buying decision on whatever factor is the most important to you, be it speed, price, reliability or any one of a host of features that can only be detailed in the full review and not in a single rating.



Understand our scoring system.

WIN • WIN • WIN • WIN • WIN • WIN

WIN A PRINTER!

Amiga Shopper, *in conjunction with Citizen, is offering you the chance to win your very own colour dot-matrix printer, worth more than £230!*

The Citizen Swift 9 is a highly acclaimed nine-pin dot-matrix printer. It is a compact, tidily-designed machine, capable of producing excellent quality text and graphics. It comes with Times, Sans Serif and Courier fonts in a variety of sizes from 10 to 20 pitch, but of course the Amiga can drive it to use any font at any size. It can emulate an Epson, ensuring total compatibility, and its on-board 8K buffer speeds up printing enormously. Our prize also includes the colour upgrade kit, enabling you to print out those stunning IFF graphics on paper.

In our review of dot-matrix printers, Mark Smiddy was impressed: "Living with the Swift is a dream ... by far the best feature, and what would certainly sell it to me, is Citizen's unique control panel. The system is so beautifully easy it almost defies description. Output quality is excellent. Overall the Swift 9 is probably the best 9-pin print engine around." High praise indeed!

So how can you win it? Simple: just have a quick read of the incredibly easy questions below, fill in the coupon, stick it on the back of an envelope or postcard, and send it to Citizen Printer Competition, *Amiga Shopper*, 29 Monmouth Street, Bath BA1 2AP.

Here comes the small print. All entries must be received by August 1 to be considered. Entries must be on the back of an envelope or postcard, not in an envelope (we hurt our hands opening hundreds of envelopes, you know). Anyone who works for Future Publishing or Citizen can't enter. The editor's decision is final. I've made up my mind and that's that. No arguments. AS



This Citizen Swift 9 could be yours in days – just answer the incredibly simple questions on this page and bung the entry form in the post.

QUESTIONS • QUESTIONS • QUESTIONS

Question 1
Who directed *Citizen Kane*?
- A H G Wells
- B Orson Wells
- C Alan Wells

Question 2
Which of the following is a swift?
- A The name of the clock chip in an Amiga
- B A disease of sheep
- C A type of newt

Question 3
Which writer invented Ice-Nine?
- A Kurt Vonnegut
- B Joseph Heller
- C Isaac Asimov

Question 4
Who was the first printer in England?
- A Johnathan Epson
- B Johann Gutenburg
- C Thomas Caxton

Tick the appropriate boxes and fill in your name and address, then send the coupon, stuck on the back of a postcard or envelope to:
Citizen Printer Competition, Amiga Shopper, 29 Monmouth Street, Bath BA1 2AP by August 1.

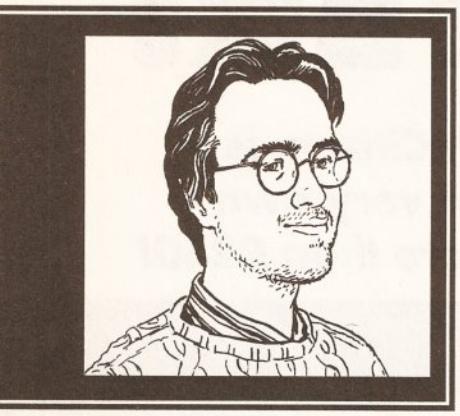
Question 1	A ☐	B ☐	C ☐
Question 2	A ☐	B ☐	C ☐
Question 3	A ☐	B ☐	C ☐
Question 4	A ☐	B ☐	C ☐

Name ____________________

Address ____________________

Postcode __________ Telephone __________

TALKING SHOP



When Andy Warhol said everyone would be famous for 15 minutes he reckoned without AS. On these pages you can be famous for a whole month, and win a whole £5 into the bargain. AS's new editor Stuart Anderton is your host...

Mind your language

Who was Cliff Ramshaw aiming his article 'Breaking the Language Barrier' (*AS* 2) at? BASICally, what I'm trying to say is, the article seemed to have been COMPILED from a whole bunch of concepts, some of which were irrelevant.

FORTRANately for me I could C what Cliff was driving at, but he could have taken a more MODULA approach which would have meant that non-techies would not have needed an INTERPRETER. Have a chew on a Fruit PASCAL, take your time and ASSEMBLE your thoughts in a more orderly fashion, Cliff.

M J D Castle
RAF Wattisham
Suffolk

Sorry you thought the article was COBOLled together. We'll try to set FORTH our ideas more carefully in future, with the ADA more explanations.

Bimbos in the desert

Someone out here lent me a copy of *Amiga Shopper*, great magazine, like it. Who needs glossy coloured pics?

As to what I'd like to see, how about a series of articles on what makes the Amiga tick, the ROM kernel manuals explained for bimbos?

Ref your "Who are you?" snippet, you're welcome to drop round for a chat anytime! Quite a few Amiga owners in Oman actually, enough to start us thinking of an Oman User Group.

Mike Lundberg
RAFO Khasab
Oman

I'd call round for a drink, but I suspect you can get arrested for that over there and tea just isn't the same. As for making AS a magazine for bimbos, a beginners' course in hair styling starts next month, written by Ian, our production editor. Seriously though, I hope you like the piece on Intuition programming on page 79, and there's plenty more where that came from. If you do set up a user group, drop our user groups' page a line and we'll give you a plug.

Less is more

Having recently bought an Amiga A500 for my son, I decided to see what magazines were available. I was surprised to find a fairly wide range, but even more surprised at the prices. I baulked at paying £4.95, and even £2.95 was on the high side. Eventually I settled for a copy of *Amiga Shopper* which seemed to fit the bill nicely.

Back home, a more detailed look left me with the impression that it was too busy and there was too much to read. However, I took the trouble to go through it all and it was worth the effort. For instance, I never knew what PD software was until now.

Having said that, can I pull you up on one small point. In a recent reply, I read "...having less editorial pages...". I'm sure it was a slip of the pen and you really meant 'fewer pages'. I have already sent off a year's subscription so I will definitely know if the editor is checking over what you done wrote.

K G Lee
Camberley
Surrey

I hope you will have less complaints about this issue.

Dunzappin

At last, thank goodness! Someone's finally arrived at the notion that there is more to the Amiga than playing games. Not that I'm knocking games you understand – they're very therapeutic and I still dig *Interceptor* out of the disk box – but there's more to life and computing than zapping aliens.

I would be interested to know who you are aiming the mag at. It looks as if the younger reader is being targeted. In many ways, *Amiga Shopper* retains the "comic" image common to the majority of computer magazines on the market. For instance, the cartoon images of the staff writers hardly inspire confidence. Either get rid of them completely or at least replace them with proper photos. And AMOS! Who thought that one up? OK, product sales have exceeded 40,000 and that's great for the software house but, after all, it's only a glorified Basic. I know that a number of software packages created with AMOS have been marketed but I would have thought that if you were going to get serious about programming then you would have made Basic itself the subject.

Keith R Munn
Glasgow

The magazine is aimed at every Amiga enthusiast who wants something a bit more substantial than a games cheat, simple as that. Young and old, men and women, blondes and brunettes, as long as they want to know more about their favourite hobby, AS is for them.

As for AMOS, you answer your own question: 40,000 copies have been sold so 40,000 people out there want to know how to get the best out of it. So we tell them. We will also cover other Basics, in fact we will cover any language our readers want to know about. Why not write in and let us know what tutorials you would enjoy reading?

Tell me it's not true

I just got done reading your round-up of external floppy drives in the May 1991 issue. You people didn't actually stand on the drives and swing them by the cable? You didn't actually pour coffee on them, did you? I can't believe that you would pour bleach on a disk drive!

Please tell me that this is an April Fool's joke, just a little bit late!

Chris Edgin
Rockford
USA

No April Fool's joke, just a fair (if tough) test.

Making a click stop

I purchased the anti-click board and I find that it works – to a certain extent. On a cold boot, the mechanism seems to work fine, and the drive doesn't click at all (df0:, that is). However, whenever I reboot the computer (using [Ctrl]-[Amiga]-[Amiga]) and I leave a disk in the drive, then once the disk is ejected df0: starts clicking again. I found that the only way to prevent this is to eject the disk before rebooting, and then everything seems to work OK. Apart

continued on page 14

BENCHMARKING BASICS IS NOT PLAIN SAILING

I read with interest Cliff Ramshaw's article on implementations of Basic for the Amiga in issue 3 of *Amiga Shopper*. I feel that I must point out some omissions and misunderstandings, particularly in the benchmarks.

Creating benchmarks to test the relative speed of various packages is an unenviable task which makes enemies for the reviewer faster than most Middle-Eastern dictators! He should, however, always strive to produce tests which isolate and evaluate particular attributes of the software, whilst pointing out the differences in implementation that may affect the results – unfortunately Cliff's benchmarks fail on both these counts.

First of all, the timings for the String, Trig and Factorial tests are distorted by the inclusion of code to print out the results in each case. It is well known that screen output slows down many programs, especially if the screen scrolls – certainly most finished programs would never scroll text. If you wish to test the speed of integer arithmetic or string handling you must test these attributes, not how quickly text can be moved up the screen. That's like measuring the relative acceleration of sports cars in the pouring rain; they all skid and slide, masking true performance.

At least two of the tests also suffer from implementation-dependent quirks which have not been brought to the readers' attention. Cliff remarks on the slow speeds recorded by *HiSoft Basic* and *GFA Basic* on the Bob test, compared with that of *AmigaBasic*, but makes no effort to find out why. I can only speak for *HiSoft Basic* which runs Bob (stop giggling, you *Black Adder* freaks) more slowly because it is moving the bob continuously, every pixel. In contrast *AmigaBasic* updates the screen under interrupts every so often, resulting in a faster but much less smooth movement as it actually places something like an eighth fewer bobs on the screen! *AMOS* and *Blitz* undoubtedly have optimised routines for sprite handling but again we are not told how many bobs are used with their version of the program. This is important information, without which one cannot judge the relevance of the benchmark.

The Trig test uses floating point arithmetic to calculate a trigonometrical sum which should evaluate to 1. Every interpreter/compiler treats floating point differently, however, some having slow but accurate routines whilst others sacrifice accuracy for speed. Cliff does not explain the differences in floating point representations of the various packages, nor does he give us an indication of their accuracy.

In conclusion I think that, in the interests of accuracy and completeness, you should recode the benchmarks and retime them. I would appreciate it if you would then rescore the speed rating.

David Link
HiSoft

As you say, creating benchmarks is a minefield of problems. There is a magazine in America which has full-time staff devoted entirely to producing benchmarks! Unfortunately our resources are not quite of the same level, so a couple of errors slipped through the net.

Indeed these benchmarks do include code to print the results. Although this makes the tests less 'pure' than they would otherwise have been, I believe they were still fair and gave a valid comparison. Basics with a better screen drawing routine would have benefited, as they would in the real world.

It was a bad omission on our part to leave out an explanation of the accuracy of the Trig tests. For the record, GFA Basic, HiSoft Basic and AmigaBasic all use eight bytes to represent floating point numbers. Presumably then, they all calculate their results to the same accuracy. AMOS uses four, but still managed to be slower than the rest. The idiosyncrasies of Blitz Basic's number format were pointed out in the review.

As for the Bob test, due to what scientists call experimental error and what editors call an outrageous cock-up, the time for AmigaBasic which was printed bears no resemblance to reality. In fact the timing for AmigaBasic should have been 2,369.92 seconds, not 548.04. Thus there is hardly any difference between AmigaBasic and HiSoft Basic whose figure was 2,516.65. The results for AMOS and Blitz were similarly wrong, and the Bob test results should be ignored.

Despite the problems with the benchmarks we stand by our eventual conclusion, that Blitz is the fastest Basic (21/25) while there is little to choose in terms of speed between AMOS (11/25), GFA Basic (12/25) and HiSoft Basic (10/25). However, we will be redesigning our benchmarks for tests we do in the future, and we will bear in mind your comments.

Capital North Ltd.

W E S

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EXTRAVAGANZA

at the Leeds University Exhibition Centre, Calverley Street, Leeds 2.

Friday, 13th September, 10 a.m.-6 p.m.

Saturday, 14th September, 9 a.m.-8 p.m.

Sunday, 15th September, 10 a.m.-4 p.m.

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See the latest software & hardware Thousands of bargains.

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continued from page 13

from that, I haven't had any problems with the board causing havoc with the computer.

Mikhael Michaelides
Ealing
London

I sent away to Power Computing for the anti-click board kit, from Issue 1, and put it together. All seemed fine, the board reduced disk clicks to a whisper, and life went quietly on – until I tried to load up a game called *Silkworm*. Nothing doing. Nix. Not a chippolata. So I tried my other games (OK, so I do games now and then, I can handle it). They all work fine, as do all my applications progs, utilities, etc. etc. A friend checked out the *Silkworm* disk on his machine, it worked fine – all I can think of is that it has something to do with the copy protection scheme on the disk.

Hamish A Ramsay
Stockport
Cheshire

We hadn't come across either of these problems, but with any piece of machinery as complex as an Amiga there are bound to be some unforeseen difficulties. If any reader has a solution, please tell us and we will pass it on.

Not for sale

About three weeks ago I faxed a classified ad form to you regarding the sale of PD software. I was most disappointed when I saw on the same ad form in the next issue that advertising PD software wouldn't be allowed.

I have been trying to start a PD library for some months but I cannot afford trade advertising rates as I need the money to build up my library.

George Mason
Southampton
Hants

We print the reader ads as a service for AS readers, to let them buy, sell and swap their stuff with other Amiga owners countrywide. What the reader ads are most definitely not for is the trade – they can buy advertising space for their wares from us like the commercial businesses they are. PD libraries fall into a very grey area between the two. The big, well organised libraries are definitely businesses, with staff and overheads and a charge per disk to cover these. Other libraries are run out of a back bedroom in the evenings with no profit taken. We can't judge which is which from the ads, so we are forced to take the blanket approach of banning PD libraries from the reader ads.

You can, of course, still swap PD disks through the ads, but you can't sell them; sorry.

Still smelling sweet?

First off I would like to thank you for producing the only magazine that is truly user friendly, and able to offer helpful advice on almost anything.

Anyway, I have a small query. Please could you tell me the differences between an Amiga 1500 and a 2000? I think I read somewhere that they are in fact one in the same, is this true?

Alexander Richards
West Drayton
Middlesex

They are indeed one and the same computer. In fact, if you take the lid of a 1500 you find "Amiga 2000" neatly stamped on the motherboard.

Make a date

While browsing through some of my elderly computer magazines, I suddenly had a brilliant idea. Many of the game advertisements which I saw featured excellent artwork and it seemed a shame that much of it is now long forgotten.

This is where the computer companies come in. Every year, they could produce a calendar and poster book containing their best pieces of artwork as nominated by the general public and various computer magazines.

The artists who draw them must take many hours on these illustrations – thus compiling books of this material would widen its audience and form the definitive collection of computer drawings from the very best artists! What do you think of this idea?

Stuart N Hardy
Sheffield
South Yorkshire

While I'm not sure if I'd want such a calendar on my wall, I expect there are many who would. Why not write to one of the big games firms with your suggestion? More interesting might be a calendar of images actually produced on the Amiga. If anyone has produced some artwork that might be suitable, send a copy in to AS, perhaps we could put together our own.

Nag nag nag

OK, enough, I've had it with all those moaning A1000 owners who claim to have built the Amiga market the way it is now, and nag about the fact that their machines are not supported anymore by hardware manufacturers and Amiga magazines

First of all, it is the A500 which built up the Amiga market the way it is today. Without this machine they wouldn't have dropped the prices, and the Amiga would have been exactly what the Archimedes is today: a powerful and versatile but overpriced computer, which would never had reached those millions of users as the Amiga has done.

So, all you frustrated A1000 owners, stop moaning and face the facts of life: the A1000 is an old beast, which is simply not interesting anymore for the majority of manufacturers.

Roger Popken
Stadskanall
Holland

When I left* New Computer Express *six months ago I thought I'd seen the last "My Computer is Better than Your Computer" letter. It seems I was wrong. How anyone can get worked up over someone else liking a different model of Amiga is completely beyond me. They are all excellent machines, and our limited A1000 coverage is simply down to the small number of readers with A1000s. AS

If only you could just plug in and go

I own an Atari ST and a Commodore Amiga, and although the Amiga has a superior operating system, I sometimes find myself wishing for the speed of the ST's ROM-based Desktop.

As you know, the Workbench is loaded from disk, and therefore takes a lot of time, memory and disk swaps to run properly. The first thing most people do to ease the effort of using the Workbench is to buy a second disk drive, usually followed by a memory upgrade.

My idea is this: if games producers are thinking going ahead with games production on cartridges of 2Mb, 4Mb or even 8Mb to go in the expansion port, why shouldn't the same be done for the Workbench?

A 2Mb cartridge wold be enough for Workbench 1.3 onwards, storing the Workbench disk and the Extras disk, which means that you would not have to wait for the Workbench to load and it should not need to be held in memory, thus freeing up a disk drive and a fair amount of memory. It would obviously need to have a through port for hard drives etc, as even hard drive users would appreciate freeing space taken by Workbench, especially on a 20Mb hard drive.

The price should not need to be too high as the software is already written, it seems to me that it is a matter of collating the programs, producing the cartridge and marketing it. As games manufacturers can produce cartridges at £30, a 2Mb Workbench cartridge for the Amiga need not cost any more than that.

Developing the idea further, a cartridge with up to 8Mb storage capacity could be used to hold the new Workbench 2. As I understand it, the new Workbench is out of reach of a lot of users due to the new Kickstart and the large amount of memory it occupies. The new Kickstart chip could be included in the cartridge, and the fact that the Workbench would be held in ROM means that it would use up less RAM.

A lot of Amiga users (including myself) would no doubt appreciate such a cartridge, and would gladly pay between £30 and £50 for such a device.

If you cannot see any major unsurmountable problems in this idea, I would appreciate it if you could pass it on to appropriate hardware or software manufacturers.

Gareth Perch
Kidderminster
Worcestershire

This sounds like an absolutely excellent idea to me, but can it be done? If you know of any problems with this approach, or can think of a simple way of doing it, then write to us at the usual address.

If we can get some technical details worked out, then we can approach Commodore and see what the company has to say.

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Q

Titling troubles

I do not yet own an Amiga. I am not primarily a computer enthusiast but I am looking for a high quality titling system for amateur videos. I'm trying to decide if the Amiga 500 with 1Mb is suitable for titling and, if so, which software will give good, crisp titles with scrolling and a 'proper' font with well-shaped characters (no jagged curves). I am not interested in fancy animated titles at this stage, although I may want to upgrade at some stage in the future.

I already have the video gear, including a mixer (Panasonic AVE-5) which will synchronise two inputs (S-video or composite) so I do not need a genlock. It seems from reading your magazine that the Amiga is only capable of high resolution output by deviating from the normal interlacing arrangements. Is this correct and, if so, exactly how does it affect titles recorded on a VTR?

NC Friswell
Horsham
West Sussex

A

First off, of course I would recommend that you buy an Amiga to do the titling – this is an Amiga magazine, after all. And then I would recommend the *Big Alternative Scroller*, which will work on a 1Mb Amiga and costs around £50.

This program should cover all your stated titling needs, including scrolls, crawls and a selection of useful fonts. Of course, you could opt for something more professional, such as *Scala* or *Broadcast Titler 2*, but then you'll be shelling out somewhere in the region of £200 and will also have to add more memory. So, check out *BAS* first; I think you'll be happy with it.

Secondly, although you have the AVE-5, you still require a way to get a video output from the Amiga to the mixer. So you'll have to buy either a genlock or an RGB converter. A genlock would be of more use, since you could still use your AVE-5 for mixing and then put the Amiga 'downstream' (after the mixer output and before your recorder input), so that you can put titles directly over video effects.

Finally, I don't understand where you got the idea that the Amiga is somehow perverting the course of video signals. There is absolutely no problem with video output in any resolution! Perhaps you've confused video output with monitor output/flicker fixers and the like. So, no worries there. ***GW***

Q

On the right track

Can I load a Soundtracker song or module on *Med* and vice versa? Why won't my copy of *Soundtracker* 2.4 save my songs as a module? Is it possible to control some 3-volt DC motors on the Amiga from *AMOS* or *AmigaBASIC* or would I have to use machine code? In any case, how would I do it?

Alex Harrison

A

Yes indeedy, you can load and save *Soundtracker* modules and scores using the *MED* program with no problems at all.

As for the reason your *Soundtracker* 2.4 program won't save, it is probably down to one of two possible causes: either the program disk is corrupted, in which case you'll have to get hold of another copy, or there just isn't enough room for a module left on the disk. Try deleting some things, maybe a few song scores, and you should be able to create enough room to save a module. If that doesn't solve your problem, try junking your copy of *Soundtracker* and use *MED*.

In order to control any motors or any other such device, you'd need a robotic interface. One company that may be able to help you out is MDR Interfaces ☎ 0825 790294. ***PS***

Q

SCART connections

My son has a major problem with the Amiga 500 SCART to Fidelity SCART connectors. The monitor was originally bought for a BBC micro and gave no problems, but when he tried to use it with his new Amiga we discovered that, in fact, not all SCART connectors really are SCART connectors!

The only detail we have on the monitor is that it is a Fidelity CM14 colour monitor. Please help us with details, if you can, on the pin-outs of both or either.

Jack Britten
London

A

So far, I've drawn a blank on any information about the CM14 monitor, since it seems that Fidelity is no longer in existence.

There is a way around this, if you are prepared to do some detective work and, perhaps, some soldering.

What you need to do is work out the connections from the BBC output to the SCART, then translate these

continued on page 16

KEEP IT QUIET

A noise abatement tip comes from Mike Hunter of Shirley, Southampton:

Everyone complains about the noise from the A590 disk drive. Mine was an instant headache job – I feared it would be unusable. However, the following modifications to the plastic cover have made the beast quite domesticated.

Get a kit of car sound-deadening material (bituminised felt with a self-adhesive backing) from your local car accessory shop. Cut sections to fit inside the top of the A590's lid and all round between the stiffening webs on the inside of the casing. (Use a sharp knife and a ruler to cut the material as scissors make a mess.)

This cuts out most of the noise, but not the high-pitched scream from the fan. The fan itself is nearly silent if unscrewed from the lid, so where does the noise originate? Looking for the cause, I noticed the shape of the air outlet fins: they are tapered the wrong way and have sharp edges at the fan end. Thus, the air is being blown out through seven pennywhistles.

Rounding off the bottoms of the fins on the inside of the case makes a dramatic reduction to the overall fan noise and completely eliminates the scream. I used the back of a modelling knife blade to scrape away the plastic – just enough to remove the sharp edges. Done carefully, the change can't be seen from the outside.

Well Mike, please accept a fiver from us. Hopefully it will go some way towards compensating you for the headaches you have suffered.

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connections in terms of those of the Amiga. You should be able to find all the relevant information in the BBC and Amiga manuals. For each connection from the BBC to the SCART, find the equivalent on the Amiga. Then examine the SCART end of the cable and note down what is connected where. An electronic test meter (set to read resistance) will help to find which wires are connected at each end of the cable and will mean you don't have to remove the connector covers.

Finally, you should have all the necessary information to make up a new cable – from the Amiga RGB monitor socket to the SCART. Take care, however, **not to connect or short** the voltage pins on the 23-pin Amiga RGB connection.

Alternatively, find a local TV repair shop and ask them if they are prepared to make a new cable for you. They will need to find out all the relevant information (as described above) but they should be able to sort it out for you. ***GW***

WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with anything you can throw at them. If they don't already know the answer to your problem, they will find it out. Read on for some of the typical, and obscure, problems you may encounter when trying to get the most out of your Amiga.

CONSULT *AMIGA SHOPPER*'S EXPERT PANEL

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – **do not phone us with your enquiries**, but write or fax us at the address and number below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but we will come up with an answer for you. You'll just have to be a little patient and wait for it to appear in print.

Send your questions to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Fax: 0225 446019.

The *Amiga Answers* panel consists of all three consultant editors – Jeff Walker, Mark Smiddy and Phil South – and of course resident technical editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping on any subject. Each panelist will be dealing with queries in their own specialist area and it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem. Below is a list of their areas of expertise. It's a list that we will add to and update every month so you will know who to write to about any subjects not mentioned here.

Gary Whiteley – Video.
Stewart Russell – Comms, CAD.
Paul Overaa – programming, music.
Mick Draycott – hardware, programming, MIDI.
Jeff Walker – desktop publishing, programming.
Mark Smiddy – AmigaDOS, business, CDTV, hardware projects, hard and floppy disk drives.
Phil South – public domain, graphics, AMOS.
Jolyon Ralph – programming, hardware.
Ian Wrigley – films, maths.
Stuart Anderton – obscure bands and hi-fi.
Cliff Ramshaw – the really hard stuff that no-one else can answer.

If you think you have been ignored...

Don't panic, there could be several reasons why your question has not appeared this month:

- It did not reach us in time to be included this issue.
- The answer to your question is given as part of the answer to another published this month.
- You have not given us enough information in your letter to answer the question fully.

Q

Hard disk choices

Later this year I plan to buy a hard drive for my A500. I've got my choice down to two. The first one I am considering is the Xetec Fastrack but in the hard drive trial in issue one you said that it proved too tricky to get running. I'd be grateful if you could clarify this point: is it too tricky for someone who has a fair bit of technical know how, and how does it perform when it is up and running?

The second drive under consideration is the GVP Impact II+. The only thing I want to know about this one is: does it has a through port?

MA Henderson
Tipton
West Midlands

A

The Xetec machine is pretty tricky to get up and running no matter how much technical nouse you may have. Once going it is no better than average, and certainly no longer lives up to the claims made for it. The GVP Impact II+ drive is faster, better made and generally a better unit all round. It does not have a through port – and, judging from my experience of such things, probably behaves better for the lack of it. ***MS***

Q

Transfer to video

I have a few animation and music demos that I would like to transfer to video tape. Having tried various combinations of VCR and computer to no avail, I have come to the conclusion that I require a genlock. Would this be capable of transferring the audio as well as the visuals to tape? Also, if a genlock is the answer, can you recommend a cheap one as I will probably use it only once for this particular job. Even better – do you know of anybody who will do this job for me – I don't mind paying for it.

Robert Dibdin
Chessington
Surrey

A

Taking the last question first, buy a copy of *Camcorder User* or a similar specialist video production magazine and check out the video production ads. There are many facilities with Amigas nowadays, and you should be able to find someone willing to do the transfers for you. Then you could probably just send them yours disks, tell them what you require and, Hey Presto, problem solved.

As you say, if you want to do it yourself then you would have to get a video signal from your Amiga. A modulator would work, when connected to the aerial input of your VHS (or whatever) recorder. But you would obtain much better quality by using a genlock. If you want a cheap one, try something like the Minigen. But why not try to borrow one?

All you would then need to do would be to connect the video and audio outputs from the Amiga to your recorder and off you go.

With some experimentation you should soon get the hang of it. ***GW***

Q

RAM problems 1

After your review of the GVP II hard disk in issue one, I decided to buy one of these legendary machines.

I bought the thing with 2Mb fitted. Most of my programs ran OK, but when I tried to run *Pagestream* 2, *Protext* 5, *Photon Paint* 2 or *Aegis Draw* from the hard disk they all crashed.

As soon as I removed the extra 2Mb from the hard disk the programs ran like a dream. Is the extra memory at fault, or is it a simple case of incompatibility? Is there anything I can do so that Pagestream can run with more than a pitiful 1Mb?

Neil Dudman
Potters Bar
Herts

A

There is no reason why programs such as *Pagestream 2* and *Protext 5* should crash with extra memory; I run both programs with extra memory on my machine without any problems.

It certainly sounds like a memory problem to me. Firstly, check to make sure that both SIMMs are properly

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AMOS

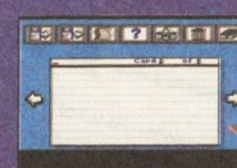
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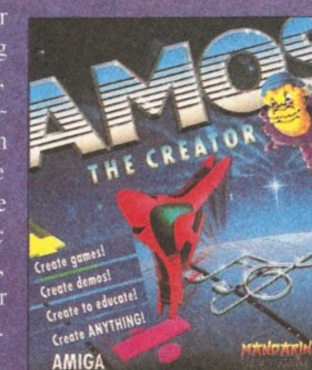




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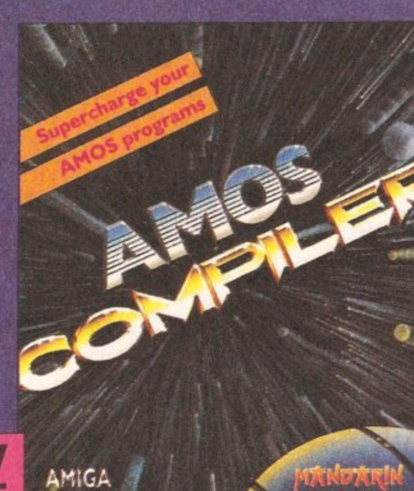
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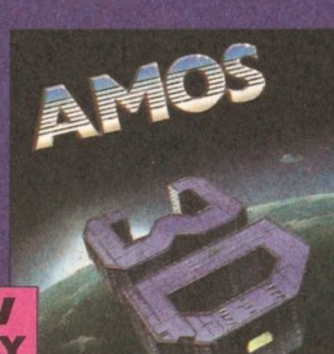
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installed. They have to be very firmly pushed into place. If one SIMM is slightly misaligned it could cause the problems you are having. If this is not the problem, it looks like you have a faulty memory chip somewhere on your GVP board. This is sometimes difficult to diagnose with software RAM-testing utilities: some chips, for example, work fine until they warm up. The first thing to try is to leave the RAM test program running overnight. If that does not find any problem, your best bet is to send the 2Mb of chips back to your supplier and ask for them to be checked out on a professional chip-tester (which all decent memory suppliers should have access to) or, better still, ask them to give you 2Mb of new chips.

There is also a chance that your GVP card could have a fault on it, but I'd recommend that you get the chips replaced first. If that does not solve it, send the board back. ***JR***

Q

RAM problems 2

I recently installed a Fast Card Plus, without the hard drive but with 2Mb SIMM chips installed, giving my B2000 a total of 3Mb of RAM. The problem I have is that, since installing this card, whatever program I use crashes after a very short time. At first I thought that I might have a virus on my machine, but all of my disks checked out OK and virus-free with *VirusX* 4.

I got in touch with Third Coast Technology (which supplied the card and chips). The people there were of some help but, like me, were left scratching their heads. It all seems to point to the RAM chips, as when I try the card without the RAM everything is fine – I can use the machine all day without a single guru. But with the chips in place the system crashes up to 10 times a day. I would like to purchase a hard drive for this card, but am reluctant to do so until this problem is solved.

John Purvey
Walthamstow
London

A

This sounds to be the very same problem that Mr Dudman is having with his GVP controller. Again, make sure the SIMMs are correctly installed. If this does not solve the problem, send them back to Third Coast and ask for them to be replaced. I should think that you would have no problems with a hard disk. It is highly unlikely that the controller is causing the problem. If the memory was not being recognised at all I would be a bit more cautious, but as the Amiga is recognising the memory (even though it causes it to crash) it is unlikely that there is anything wrong with the controller. Any SCSI drive will work with your controller. Check through the adverts in this issue to find the best price on drives. ***JR***

Q

Star LC24-200 printer

I have a Star LC24-200 colour printer and I have a number of questions which I would be grateful if you could answer:

a) In my printer's manual, I found in the specifications under the 'Bit image dot-matrix' a '24-bit hex' mode. This is the only mode that can print at 360dpi. There was a note saying: 'It is impossible to print adjacent dots in this mode'. I hope it's something that does not concern Amigas, but could you please explain what it means?

b) With which bit-image dot matrix does the Amiga communicate with the Printer? (Is it the '24-bit Hex'?)

c) I am using the Prefs driver 'NecPINWRITER'. The AmigaDOS manual says I've got to use the 'EpsonQ'. Which is the most suitable for my colour printer?

d) Sometimes, during a Workbench session, something strange happens. The pointer still moves around freely, but I can't select icons, menus or use the Shell. The computer seems completely dead except for the pointer. As well as all this, all the drives stop whirring or clicking. Why?

e) Is there any software in the public domain for making printer drivers?

E Causarano

A

a) It means just what it says: the printer cannot print two dots next to each other in this resolution, so although you have 360 printing positions per inch, at best the printer can only print 180 of them horizontally.

b) It varies depending on the density setting. Densities of 1-4 only are supported by the EpsonQ driver.

c) Probably EpsonQ – although the driver is not particularly brilliant (see the printer review elsewhere in this issue). With this driver the printer can only manage 180x180dpi for colour (density 3) or 360x180dpi (density 4) for black-and-white.

d) You have probably caught some rogue virus. A new strain perhaps? Of course, it could just be a bug in Workbench.

e1) Yes.

e2) *Printer Driver Generator* (how's that for an original name) is a good bet, and it's available from all good PD libraries. However, I must warn you that it is not easy to use. Alternatively, my good mate Nigel Streeter is collecting weird and wacky printer drivers; and when he reads this he'll probably call me and tell me what else is around. ***MS***

Q

Expansion for free?

While looking inside my Amiga 2000 I found a Commodore expansion board labelled 'A2000 1Mb RAM EXP. ASSY No. 380 745 REV .3 a 101-042'. While examining the board I noticed that there was room for 16 more chips. Does this mean I can have more memory without having to buy a 8-up board? Do you know of any place from which I can buy these chips?

Rodney Muscat
London

A

According to Commodore, that particular board is rather old and only takes the machine up by an extra 0.5Mb using a set of 120ns 41256, or similar, RAM chips. However, before you rush off and buy those chips, there is more to this upgrade than meets the eye. Although the board can be configured to take the extra RAM, it has a design fault. Testers have reported, and Commodore confirms, that the machine becomes highly unstable when the extra RAM has been added and frequently crashes without warning. Therefore, I cannot recommend that you make the modification because it is probably going to a prove a waste of money. A better bet would be to buy a later board, or one of the many third-party expansions. ***MS***

Q

Disk corruption

The tape loading problems I used to get with my old C64 are nothing compared to my Amiga. Approximately once a week I get a 'Volume so-and-so has a read write error' or 'Disk structure corrupt... ' requester on my Amiga 500.

Could it be a mains fault, and if so can I fix it? Would a voltage regulator help?

I don't know if it makes any difference, but my house is next to a motorway.

Peter Ford
Woodford Green
Essex

A

Disk errors are a fact of life and this sort of thing is by no means uncommon. The reason why disks suddenly develop errors (as I am writing this, one of the office Amigas is doing just that) is governed by the neo-science of chaos theory. There are so many factors influencing why disks go wrong that it is often difficult to pinpoint the exact cause – although it is fair to say that it probably has nothing to do with a butterfly beating its wings. Disk drives are complex magneto-mechanical, precision engineered devices and are subject to a wide variety of environmental hazards. Read the disk drive supertest in issue one and you might get some idea.

The exact cause of your problem is, therefore, difficult to pinpoint, and I can only offer some typical causes

Works Tip

In response to the second part of D Armstrong's 'Double Buffered' problem in June's issue, D Chiswell writes with a solution he originally obtained from Micro-Systems Software.

To run *Platinum Works!* from an A590 hard disk, first load the *HDToolbox*. Click on 'partition drive'. Click on 'advanced options'. Click on 'add/update file system'. Click on 'update file system'. Change the version number to 1. Exit the toolbox, remembering to save the changes to disk. Reboot from the hard disk and all should be well.

Thanks Mr Chiswell. Could you please write to us and let us know your address so we can send you your hard-earned fiver.

for the problem. Some are simple, while others are rather more subtle.

● First of all, I doubt if the problem has anything to do with either dirty mains or living near to a motorway. The Amiga has a good – if not very robust – PSU, so dirty mains would cause the machine to crash very spectacularly. Also, I doubt the Department of Transport would accept any responsibility for exhaust emissions fouling up your drive.

● Have you checked for any signs of viruses? Many PD libraries will fix you up with a disk of virus checkers if you don't already have one. Some viruses can create the effect that your Amiga is displaying.

● Are you removing disks while the drive access light is still on? This is one of the best ways to create an error, because the disk surface can get dragged across the read/write head while it's still spinning. (This can damage your disk drive mechanism too.) Remember that when you write to a disk, the Amiga updates entries in the root directory, and possibly the bitmap, about a half to one second after it finishes writing the file. You **must** let this operation complete. Resetting the machine before the disk has finished being updated can have the same effect.

● Are you using good quality disks? There's nothing wrong with unbranded disks, but they can vary greatly in terms of quality. Also, high-density disks are thought to cause problems – apart from being an unnecessary expense.

● Have you tried using *Diskdoctor* on disks after they develop a fault? This simple little program (only accessible from the Shell) can rescue a lot of disks from the bin. If the root directory fails – that is, if the Amiga can't find the disk's details – it will be renamed 'Lazarus'. This is quite normal, so don't assume that it is some curious virus effect. On a similar note, the PD program *TurboBackup* will sometimes fail and rename the destination disk 'TUBU'. Once again, this is not a virus but it is worth watching out for.

In any case, if the machine is still under guarantee, get it checked by your dealer. Do not be tempted to get a disk cleaning kit or realign the heads yourself – you will almost certainly do more damage than you will fix. ***MS***

Q

Z80 cross-assembler

Do you know of a Z80 cross-assembler for the A500 on general commercial release or in the public domain? It would be preferable if the software could port its assembled code out through the Amiga's serial port to the computer on which the code will be executed (in my case, the Cambridge Computer Z88 or the Sinclair ZX Spectrum).

Keith Rickard

A

I have been unable to find either a PD or commercial Z80 cross-assembler for the Amiga. I know that there are several available for the IBM PC, so perhaps you should think about one of the PC emulators for the Amiga. You can find out about the emulators available for the A500 in answer number four on page 22 of this very issue. ***JR***

Q

Printer cabling query

I have an Amiga 500, a Brother HR10 daisywheel printer and a Panasonic 24-pin printer, both of which have been connected for some time via the A500's parallel port. The HR10 used to be connected to a C64 using an RS232C serial interface, where it worked perfectly. To avoid having to constantly change the cables over at the back of the computer, I recently re-connected the HR10 to the serial port of the A500.

Now begins the problem. When I first print a letter or document everything works perfectly. But, if I try to print a second page, or second copy, all I get is garbage consisting mainly of '@' signs and a few numbers. This happens regardless of which program is running. The only way to print legibly again is to go into Preferences and click on 'Use'!

The dip switch settings match those in Preferences: 1,200 baud, 8-bit and even parity. In addition, I have a 512-byte buffer, 1 stop bit and RTS/CTS handshaking selected in Preferences.

What am I doing wrong?

Peter Richards
Haywards Heath
West Sussex

A

Your problem seems to stem from handshaking. Somewhere along the line the printer is going out of sync with the Amiga. Clicking on 'Use Preferences' probably resets data in the serial buffer and this might be partly or wholly to blame. Serial information is sent one (binary) bit at a time, so even a single bit going astray will throw the entire operation to the dogs.

Overall, this is a tricky problem which is difficult to analyse without looking at the individual setup – there is more to serial communications than just baud rate (transmission speed), parity (error checking) and handshaking. Three other lines are used to control devices such as printers: DSR (Data Set Ready); DTR (Data Terminal Ready); and SSD (Supervisory Send Data). If that isn't complex enough to work out, you will probably have to ensure the DIP switches are set correctly on the printer for these too.

I'm quite prepared to throw this to other readers who may have solved this problem with a serial printer. In the meantime, I suggest you experiment with different methods of handshaking – Xon/Xoff, or even none at all if the printer will let you select that option. ***MS***

Q

Powerboard RAM

It was said in the June 1991 issue of *Amiga Shopper* that the KCS Powerboard can only access 640K in PC mode. Can the AT-Once access all 1Mb of my Amiga memory? Also, can I buy Compugraphic fonts for *Pagesetter* II from a PD library, as they are rather expensive commercially?

David Proffitt
Parbold
Wigan

A

Yes, by clicking on a few buttons the AT-Once installation software will allow you to decide how much of the memory you have fitted is available to the PC.

Compugraphic fonts are the copyright of, Agfa and you won't find any (legally) in the public domain. Compared to the price of single PostScript fonts for the PC (as much as £120), £100 for the 35 faces in the *CG Outline Fonts* pack seems a snip. ***JW***

Q

Do I have a virus?

About a week ago, I got a phone call from my uncle who had just returned from a trip to Germany where he had bought an A500. The call was regarding a virus that he thought he had caught. I popped round, armed with a few virus killers, but when I got there a different story emerged. It appears that the day before, a message appeared on the screen which, when translated, said something about a virus. After this, the screen promptly

continued on page 21

Vector Tips

Steven Hayes of Worcester has some points to make about* Vector Check*, the assembly language program listed in issues one and two:

I thought I would just inform you of a couple of changes I had to make to get *Vector Check* to work. I use the *Devpac* 2.14 assembler, so this missive is mainly for *Devpac* users.

The first minor change was in the first half of the listing – the third line, to be precise. The 'incdir' statement was followed by 'dh0:include/'. I presume that this was either a typing error or that the author has his assembler program and libraries on a hard disk. Floppy disk users should change 'dh0:' to 'df0:'.

The second minor change was also in the first half of the listing, at the line labelled '.sk0'. The change in question is to put brackets around the 'a0' register, because *Devpac* gets upset if you leave single registers on their own.

As I said, these alterations are, as far as I know, for the *Devpac* assembler. I appreciate that with any listing of this kind it is very difficult for the author to produce a version that is guaranteed to work on all machines and assemblers.

Thanks mightily or your comments, Steve. Five pounds is travelling towards you right now.

As you rightly point out, the reason for the 'incdir dh0:include' is that Jolyon has his system set up on a hard disk. This path has to be changed depending on the way the system has been set up.

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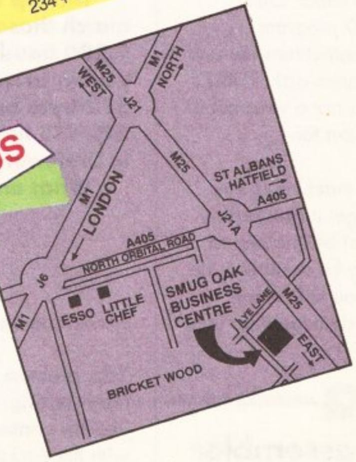
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turned black-and-white. I've done everything I can think of to return the display to colour: different leads, tuning the TV, using another modulator and so on, but still no joy.

At this point I inserted *KDV* 3. It gave a message saying: "Warning, something is resident in memory." It seemed to call it 'KickTag Ptr 202a2'. Selecting the option to kill, I was confronted with the following message: "Warning, something is intercepting DoIo calls to 204ac."

I then checked the disks and all were OK. Is the above something in the operating system that *KDV* 3 does not comprehend, or is there such a thing as a virus that can permanently reside in the computer and do permanent damage?

Anyway, the machine is now on its way back to Frankfurt and my uncle will now purchase one in the UK.

Lee Dashwood
Bournemouth
Dorset

A

There is **no** way that a virus could affect the hardware of an A500 in any way. There is also **no** way that a virus could permanently reside in the computer hardware.

However, the response that *KDV* 3 is giving does suggest that a virus is in memory. It may be a virus that *KDV* 3 is not aware of by name. The operating system can confuse virus killers in one particular circumstance. If you have the line SETPATCH R in your s:startup-sequence file, some virus killers will tell you that: "ColdCapture has been altered". I am not aware of anything in the operating system that would alter the KickTagPtr though. Viruses often use the KickTagPtr, and often intercept the DoIO calls. If it is a new virus that *KDV* 3 does not know about, your disks will check out as clean.

So, you can be sure that there is something in memory that is deliberately staying there after reset and is also affecting disk drive access. There are some utilities that do this, such as PD programs that switch between DF0: and DF1: as the boot drive, and even some memory-resident virus killers (though I very much doubt that *KDV* 3 would detect itself as a virus).

I would try getting a newer virus killer to try on your disks. Failing that, send a copy of one of your suspect disks to one of the virus killer authors; it may be a new virus that they have not yet come across.

Your colour problem sounds to me like a totally unrelated hardware fault. You should have no problems with your new machine. Make sure you write-protect all the Workbench disks and, if possible, do not use any of the disks that you currently own until you receive a virus killer that can definitely cure your disks. ***JR***

Q

Which CAD package?

I am completing a City & Guilds AutoCAD course and would like to find a reasonable CAD program for the Amiga 500.

I have expanded my Amiga to 1Mb of RAM, and I have an external drive, Philips CM8833II monitor and a Citizen Swift 24-pin colour dot matrix printer.

Using *IntroCAD* is not particularly good, due to flickering, and the program leaves a bit to be desired. I considered *X-CAD* but cannot get a program or demo disk to evaluate it and check if the 24-pin printer is compatible.

Cliff Lowe
Ashford
Kent

A

You have the perfect setup for *X-CAD Designer*, a neat 2D program which produces monochrome plots at 180dpi on any Epson LQ-compatible. Since your printer is capable of 360dpi, you might like to try the PLT: plotter emulator on Fish Disk 467. This neat but fiddly piece of software allows any Preferences printer to accept HP-GL commands, so you should be able to create colour plots using it. If you're really concerned about output quality, you could dump the plot to an IBM 3.5-inch disk and use a pen plotter at college.

There is a demo of *X-CAD Designer* (printing and saving disabled) available for download on CIX, but I haven't seen it anywhere else. The program has exceedingly fast zoom and redraw, and therefore working in stable, medium resolution isn't too great a problem. *X-CAD Designer* cannot directly read *AutoCAD* DXF files, but converter programs (one of which is shareware) are available. ***SCR***

Q

Compugraphic fonts

I recently bought one of Gold Disk's *Publisher Series Type* disks, which contains Compugraphic fonts (Garamond, Futura and Antique Olive) for use with *Professional Page*. The fonts are all roman versions of the typefaces. To get italics or bold text, *PPage* has to slant or heavy-up the roman font because the true italic and bold fonts are not on the disk.

If I use bold or italics in a document, save it to an EPSF file and take it along to a DTP bureau for outputting to a typesetting machine, will bold or italics text appear in the printed output?

Paul Seale
Burgess Hill
East Sussex

A

What *PPage* puts in the EPSF file is the name of the typefaces to use. Even if you haven't got the actual italic face, *PPage* will recognise that you want something in italics (or bold) and add a line in the PostScript file requesting the italic face to be used. The typesetting machine will read this information and then use its own built-in faces of the same name, if they exist. If they don't exist, the bureau will either have to change the face to something else, or download to the typesetting machine the exact one you require.

The best thing to do is talk to the bureau is doing the work for you. Take an example printout from your dot-matrix printer or whatever, and tell them the exact names of the typefaces you have used. Some faces are called one name on one particular DTP system and another name on the typesetting machine. For example, Compugraphic's Triumvirate is the same as PostScript's Helvetica. The bureau will know all about this.

As for the free *PPage* 2 upgrade – yes, I know of some *PPage* 1.3 owners who have received it. It takes a while though. Consider contacting Gold Disk again after six to eight weeks. They have a legal obligation to to supply the free upgrade, even to customers outside the States. ***JW***

Q

RAM disk icons

What is the correct path name to call up the RAM disk icon so that I can edit it on Iconed? I have tried RAM disk: but I simply cannot seem to find the right path.

Paul Compton
Fareham
Hants

A

There are two paths actually, and RAM disk: should normally work, but the safest and simplest way is to use RAM:. Don't forget that .info is added for you. For instance, to access MyIcon from the RAM disk just enter:

```
RAM:MyIcon
```

MS

Q

Modem problems

I have an A500, second drive, 0.5Mb upgrade and Pace Husky Linnet 2123 Modem. Spurred on by your first issue's comms feature, I bought *NComm* and *JRComm*.

I couldn't get anywhere with the modem, so can you summarise the *NComm* commands I should use to get the system working?

Nick Kenworthy
Lower Kirkgate
Wakefield

A

The Linnet is a Hayes-compatible modem capable of V.21 (300 baud) and V.23 (1,200/75 baud) operation. Neither *NComm* or *JRComm* directly support V.23, so we'll stick to 300 baud.

In *NComm*'s Serial menu, set Baud Rate to 300, Data Length to 8 bits, Parity to None, 1 Stop Bit, Full Duplex and Handshaking to None. This setting, known as 8n1, should allow you to connect to most of the bulletin boards around.

Try typing the key sequence AT

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11 things ... you always wanted to know about the Amiga – and weren't afraid to ask

1 *What is all this business about fatter Agnus and fast and chip RAM?*

The Amiga has a Motorola 68000 16/32-bit processor. This is the chip which has control over the rest of the computer – the 'brain'. It has an address space of 16Mb; the Amiga is set up in such a way that 8Mb of this is available for random access memory (RAM). On the Amiga, not all of this addressable memory is the same and the difference stems from the fact that part of the RAM address space is shared by both the 68000 processor and the Amiga's three custom chips. It is this shared memory that is commonly referred to as 'chip' memory.

The three custom chips (called Agnus, Paula and Denise) handle a number of specific tasks involving graphics, general screen display operations, direct memory access (DMA) and so on. (The blitter, the device which can move pixel data around the screen at speeds approaching one million pixels per second, is part of the Agnus chip). The amount of memory that these original custom chips could share was limited to that definable within a 19-bit address space. This meant that no matter how much memory was available in the machine, the custom chips could only access the lower 512K. Since Amiga graphics and animation programs have grown in size and power in recent months, the 512K limitation has become noticeably restrictive.

Several years ago, Commodore began working on an enhanced chip set (ECS) and this included a replacement for Agnus called 'Fat Agnus'. This new version, so called because of its physical shape, effectively does the same job as the original chip, but reduces the support component chip count – all clock generation for the Amiga system, for instance, is now incorporated into Fat Agnus, as are the control signals for handling chip RAM access.

The big difference as far as chip memory goes, though, is that Fat Agnus now has address lines which can access twice as much memory. Hence a machine fitted with Fat Agnus has 1Mb of shared address space and so can have 1Mb of chip memory fitted.

The easiest way to find out which Agnus you have is to take the cover off and have a look – the original Agnus chip has a part number of 8361, Fat Agnus on the other hand has a 8370 part number. Unfortunately, doing this will invalidate your warranty, so perhaps the best idea is to ask the dealer from which you purchased the machine to check the serial number with Commodore technical support. They should be able to give your dealer the necessary information over the phone. Another possibility is to use a software-based check – there is a public domain program called *VectaCheck* on one of the Fish disks which can detect the presence of the Fat Agnus chip.

It's not a difficult job to swap over a few chips, but nevertheless the only official way to get your machine fattened up is through Commodore's official service engineers FMG (☎ 0733-391234) who will provide, and install, a Fat Agnus chip for £80 (not £20 as stated last month).

Fast RAM is so-called because processor accesses to it are quicker than to chip RAM. This is because the Amiga's bus contention scheme is such that the main 68000 processor can sometimes get locked out of the chip memory address space because of something known as cycle-stealing. One graphics-intensive situation in which this can occur is during DMA-oriented high-speed blitter operations. A program running in chip memory could therefore be slowed down at these times. Some clever hardware tricks, however, allow the 68000 processor, even while locked out of chip memory space, to still access memory outside this region. This non-chip memory region, or fast memory, is therefore an ideal place for putting your executable programs. For maximum speed you would ideally want to have a reasonable amount of fast memory also available – programs running in fast memory would then not be slowed down by any custom chip cycle-stealing operations.

2 *Where can I obtain a suitable printer driver for the Canon BJ-10e bubblejet printer?*

Although I don't know of a direct driver, there is a driver for the BJ-130 printer available, and you can use this if you switch your printer to BJ-130 emulation mode. The driver is on Jamdisk #2 (from the magazine Jam, produced by the multi-talented Jeff Walker ☎ 0895 74449) for £2, or can be obtained from Canon on 081-773 3173. Alternatively, Dixons should now be stocking it along with the printer.

3 *What are viruses?*

Viruses are unpleasant little programs. They come on disks, either as a file or in the part of the disk known as the bootblock – the part of an autobooting disk which is read when the Amiga is reset. When an infected disk is placed in the Amiga's drive, it will load into memory and subsequently copy itself to any more disks that are inserted.

Viruses tend to be small and are very good at hiding themselves. They weedle themselves into programs carrying out legitimate Amiga functions, ready to corrupt files or crash the system at their leisure.

A virus cannot survive a power cut. Switching your Amiga off between disk changes ensures that any resident viruses will be destroyed before they get a chance to replicate. Neither can a virus copy itself onto a disk that has its write-protect tab open.

Because constantly switching your Amiga on and off is a drastic step to take, it is a good idea to get a virus hunter/killer from the public domain. These recognise most (but not all) viruses and will remove them from disks or memory. That way you can check out each new disk as it comes into your possession.

4 *How can I run PC software on my A500?*

You need a PC emulator. There are now three choices for the A500: the Vortex AT-Once card (IBM AT emulation) for £199, the KCS Powerboard (IBM XT emulation) for £229.99, and a new software IBM XT emulator (including hard disk support) available for $30 from the author, Mark Tomlinson, 30 Kirner St, Christchurch 9, New Zealand. There is a PD demo version of this emulator available from bulletin boards and PD companies, which is limited to 15 minutes activity and only 2Mb of hard disk space. The AT-Once card was reviewed in issue three of *AS*; the KCS Powerboard was reviewed in issue two.

5 *Is it possible to expand my A500 beyond 1Mb?*

There are now several memory expansions for the A500 which will take it past 1Mb. The Cortex Expansion from Memory Expansion Systems (☎ 051-236 0480) starts at £279 for 2Mb of RAM,

and can take a maximum of 8Mb. It plugs into the Amiga's side expansion slot, but duplicates this slot so that other things, such as hard disks, can be plugged in afterwards. The Supra 500RX RAM expansion unit can take up to 8Mb. Like the Cortex system, it plugs into the expansion slot and duplicates it for the addition of extra peripherals. Prices start at £169 for 2Mb. It is available from, among others, WTS ☎ 0582 491949.

If you are considering doing serious amounts of work on your Amiga, it might be worthwhile investing in a hard disk drive. Most of these can have RAM put inside them. Check out our 'Hard Drives On Trial' feature in issue one for more details.

6 *What is a printer driver?*

A printer driver is a program. It converts output from other Amiga programs into a form that a particular printer can understand. This is necessary because printers from different manufacturers use different internal codes to accomplish the same effects (such as bold, underline, italics and things like that).

The Amiga sends ASCII codes to the printer device (PRT:). ASCII is a standardised code used to represent alphanumeric characters. Along with these it sends ANSI escape codes to make various changes in output format (such as switching to italic or bold). See Appendix D of the A500 manual for a list of the ANSI escape codes.

These codes sent to PRT: are then translated by the installed printer driver and sent to the printer via the serial or parallel interface. For details of how to install a printer driver, see Chapter 6 of the A500 manual.

7 *Can I get my graphics to print without leaving a white bar between each line?*

Just about every one of the cheaper printers (less than £2000) suffers from this problem. Banding, as it is known, usually occurs because of slight inaccuracies in the paper feed mechanism. You can achieve better results by selecting 'Single sheet' from Preferences and using manual feed paper in your printer.

8 *What hardware and software do I need to be able to digitise colour photographs and do video titling?*

You will need some kind of digitiser to capture your colour photographs. There are some genlocks that contain digitisers beginning to appear in the UK. (for example, the VideoMaster VM-2 genlock, reviewed in issue one, which is distributed by Power Computing ☎ 0234 843388). This is useful because you're going to need a genlock as well if you want to do video titling.

However, you will probably find it cheaper to buy a digitiser, such as DigiView (if you simply require static images from a video camera), or a setup along the lines of Rombo's Complete Colour Solution if you ever want to grab images from video as well (although the video player you are using must have a perfect still-frame facility).

You will need at least 1Mb of memory (and preferably more) to grab high-quality (HAM interlace) images at full TV resolution (overscan).

On the software side, you would need only three programs to get you going. Firstly, the titler – for cost and features I recommend *Big Alternative Scroller* (aren't there any other titlers out there for £50 which scroll, crawl, have a good selection of fonts and look OK?) You will also need something for making adjustments to your digitised photos – either *Photon Paint* 2 or *DigiPaint* 3 are recommended here. And finally, if you want a good all-round paint program, with an animator thrown in, then add *Deluxe Paint* III to the list - it's still hard to beat in terms of value for money.

9 *How do I install a disk when I only have one drive?*

Installing a disk means that it will become autobooting, so that it can be inserted at the Workbench prompt instead of the Workbench disk.

To install a disk, enter the Shell or CLI and type:

```
Install ?
```

When an AmigaDOS command is typed with a question mark instead of a list of arguments, the command is loaded into memory in the normal way; however, instead of executing, it presents you with a command template. This is AmigaDOS's way of explaining the type of arguments it expects. Because the command is loaded into memory once the template appears, you can remove the Workbench disk and replace it with the disk you want to install.

Having done this, type 'df0:' and press [Return].

You need to copy some of the system files from your Workbench disk to this one in order for your programs to run properly from an autoboot.

10 *Are there any lightpens or graphics tablets available for the Amiga?*

Lightpens are rather old hat, since they are inaccurate, tiring to use, and tend to make your monitor very smudgy. Unless you find one very, very cheaply I would never recommend them to anyone.

Graphics tablets use pressure sensors (reasonably cheap) or use electromagnetic induction (accurate) to locate the pointer. Stylus pointers are generally preferred for artwork, since they act like a fixed-width pen. Puck pointers (like an accurate mouse) are ideal for CAD since they allow point-perfect tracing.

Two types are available from the Amiga Centre Scotland (☎ 031 5574242): the Summa Sketch A4 graphics tablet at £569.88 and the Cherry A3 graphics tablet at £587.50.

11 *I'm puzzled by the various sub-directories with the fonts supplied on the Extras disk. How do I get them across to be included with the fonts on the Workbench disk? Will I also need to run FixFonts afterwards?*

The sub-directory structure for the fonts on the Extras disk is exactly the same as the corresponding structure for the fonts on the Workbench disk. All fonts are stored in the directory 'fonts:'. This holds several sub-directories, each corresponding to a different typeface, such as Pica or Times. A different file for each font size is stored in each one of these sub-directories. For example, the Courier directory contains files for point sizes of 11, 13, 15, 18 and 24.

As well as these files, the fonts: directory also contains a file for each typeface. These files contain general information about the typefaces. The file for the Courier font is called, not surprisingly, 'Courier.font'. To copy the Courier font on to the Workbench disk, proceed as follows:

```
copy c:copy ram:
copy c:makedir ram:
```

Then insert the Extras disk and type:

```
copy "Extras 1.3:fonts/Courier.font" ram:
makedir ram:Courier
copy "Extras 1.3:fonts/Courier" ram:Courier all
```

Insert the Workbench disk and type:

```
copy ram:Courier.font SYS:fonts
makedir SYS:fonts/Courier
copy ram:Courier SYS:fonts/Courier all
```

You only need to use *FixFonts*. when a new point size is added to an existing font, to stop the system getting confused as to which sizes are available for use.

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[Return] into *NComm*, and your modem should reply with 'OK'. If it doesn't, there is something wrong with your setup. If all the cables are OK, then there is just a possibility that your Amiga's serial port is in need of repair.

NComm should come set up for Hayes-compatible modems, but the modem can be dialled using the ATD command. To dial the number 123 4567, you would type ATD1234567 [Return], and the modem would connect by itself. This would be indicated by the CONNECT message, and then the sign-on string from the BBS. ***SCR***

Q

Auto-booting disks

Having written a couple of short scrolly intros using PD programs, such as *DOPE intro maker*, *Space Writer* and so on, making a list of all my disks using *KindWords*, completing a couple of masterpieces on *DPaint II*, and composing a short musical intro using *SoundTracker*, how do I put them all on one auto-booting disk and get them to run? I realise that certain directories have to be present on the disk, but which ones and how do I get them there?

Keith Pattenden
Swinton
South Yorkshire

A

There is no easy answer to a question such as this, because every application requires different directories. Large, Workbench-based products will usually need a complete set of directories and a subset of AmigaDOS commands, whereas a music tracker such as *MED* or *SoundTracker* may only need a few. In fact, some demos throw away the middle man and run directly from the boot sectors just like a game.

A very simple boot disk will require just an S directory. This allows you to put the 'startup-sequence' script on the disk and start the application from there.

Briefly, the other directories are assigned as follows:

C – AmigaDOS commands. Any executable file placed in here can be run automatically from the startup sequence.
DEVS – Devices. These are the software interfaces that drive the interface hardware, such as the printer, serial port and so on. Also here are the system-configuration (required by Intuition), printer drivers, mountlist and keyboard setup files.
LIBS – Libraries. External libraries of functions available to any software which requires them. Workbench, for instance, uses the icon.library to handle the icons.
L – Handlers. Various other little goodies used by the system. For instance, Shell-seg provides the resident code for the Shell CLI extension, RAM-Handler drives the RAM disk and so on.
FONTS – The disk-based font definitions. You'll only need these if the program requires extra fonts. The default system font, Topaz, is already included in the ROM. However, the inter-relation in the system means that if you need to used disk-based fonts, you must also have the diskfont.library in DEVS.

As you can see, this is a very complex question and the only answer is often trial and error. With experience you will get to know which files are superfluous and which are required. To get you started, an interesting piece of shareware called *WhatIS* can help you determine which 'resources' a program requires. It is available from most good PD libraries. You might also like to try *Mastering AmigaDOS Volume One* (ISBN 1-873308-00-0). *(not another plug Mark? – Ed)*. Although not intended for beginners, it covers boot disks in great depth. I know, because I wrote it. ***MS***

Q

24-hour clock

Following the advice given in the May issue of your magazine, I now have a digital clock displayed when Workbench is running. I now wish to go one step further and have the clock in 24-hour mode with seconds and the date displayed. How do I alter the clock default settings so that this new mode becomes the norm?

M Norman
Ripon
N Yorkshire

A

The possible display options for the clock can be shown by typing in 'clock ?' from the Shell. Making it display in 24-hour mode with seconds and date can be done by replacing the 'run clock' line in your startup-sequence with the following:

```
run <nil: >nil: clock
digital1=240,0 24hour seconds
date
```

For those readers who haven't seen the May issue, this is a line that can be inserted into your startup sequence (using an editor such as ED) to display a clock while Workbench is running. ***CR***

Q

Accessing the clock

Having finally decided that it was time I learned to type properly, I bought the excellent *Mavis Beacon Teaches Typing*. The program keeps a record of your progress, with date and time, in a script file. As I wanted the program to access the battery-backed clock that I have fitted, I added the following line to the startup-sequence after loadWB:

```
SetClock >NIL: opt load
```

The response from the Amiga is 'Unknown Command SetClock'. I find this surprising, as the program uses the system clock, so why not the battery backed one?

Presumably I'll need to add some commands from my Workbench disk, but I don't know which ones. Can you help? There isn't much free space on the disk, but I don't mind deleting the 'Resume' program.

SJ Ellison
Dunstable
Beds

A

You are right in thinking that a command from the Workbench disk needs to be copied over. However, it is so small that you shouldn't have to delete anything from the *Mavis* disk.

The command you want is stored in the C directory of the Workbench disk. Boot up your machine with this disk and open the Shell. Then copy the copy command to the RAM disk by typing:

```
copy c/copy ram:
```

Also make a copy of the SetClock command:

```
copy c/SetClock ram:
```

Then insert the *Mavis* disk and type:

```
copy ram:SetClock df0:c
```

And that should do the trick. You might also like to change the keyboard from an American to a UK layout. To do this, you will need to copy several things to the RAM disk from Workbench, as follows:

```
copy system/SetMap ram:
copy c/ed ram:
copy devs/keymaps/gb ram:
copy c/makedir ram:
```

Now insert the *Mavis* disk. A subdirectory holding the keyboard layouts has to be created within the 'devs' directory. To do this, type:

```
makedir df0:devs/keymaps
```

Then the gb keymap has to be copied into the new directory:

```
copy ram:gb df0:devs/keymaps
```

Next, the SetMap command has to be copied to the disk. This command resides in the System directory, but it'll work equally well if placed in the C directory. Copy it by typing:

```
copy ram:SetMap df0:c
```

Finally, the startup-sequence has to be edited so that it takes account of the new keymap:

```
ed df0:s/startup-sequence
```

Insert the following line between the stack command and the LoadWb command:

```
setmap gb
```

From now on, the quotes key will be where you expect it to be. ***CR***

Q

Jerky games

I own an A500 with Kickstart 1.3. It is fitted with an A501 RAM expansion and has two Amiga 1011 disk drives. How I can add more memory to my Amiga. I play a lot of games, mostly flight simulators, but they tend to be a bit on the jerky side. Most games offer you the chance to sacrifice graphic detail, sound or animation scenes to enhance gameplay smoothness. I read your guide to hard disk drives in the first issue, and I think that this is what I need. If I bought a hard disk drive, like a GVP or an A590, would this make the games run better and allow better graphics?

If fitted, would this affect the warranty on my machine, and could the A501 RAM expansion still be used or would I have to remove it?

Stephen Bell
Westcliff on Sea
Essex

A

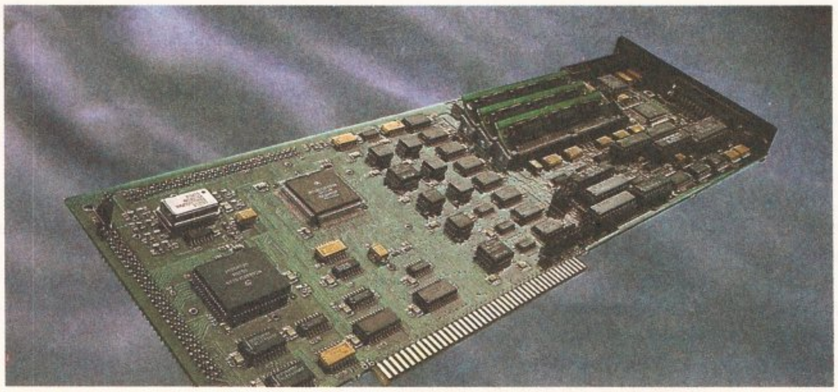
A hard disk drive would not improve the graphics on your games. A hard

continued on page 26

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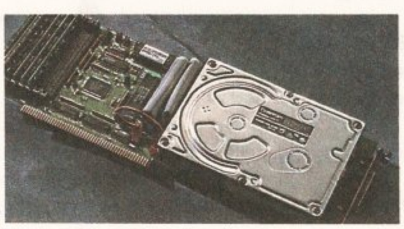
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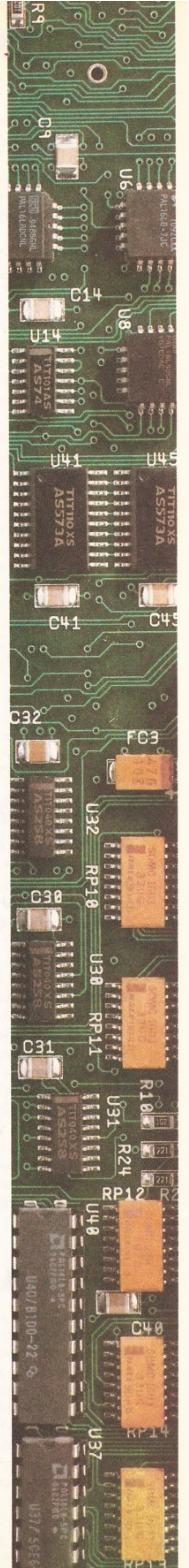
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continued from page 24

disk is like a floppy disk, but bigger and faster. It means that sections of a game can be loaded into your computer more quickly and that you won't have to do any disk swapping. But it will not actually change the speed at which your computer displays the graphics or plays the game. The only thing that would do this is an accelerator card (see Phil South's article on page 29 of Issue 3). Even then, the increase in speed might not be as great as you would hope, and you would have to be a pretty dedicated flight simulator fan to spend so much money to improve your games.

Fitting an external hard disk would not invalidate your warranty. Most drives connect to the Amiga's expansion slot at the side, leaving the trapdoor free for your A501 RAM expansion. If you want more than 1Mb of RAM, this must be added to the same slot as the hard drive. There are two ways to do this: most drives have space on their circuit board for RAM chips – for example, the A590 has space for up to 2Mb, whereas the GVP Impact II+ has space for a whole 8Mb.

Alternatively, the Supra 500XP actually duplicates the Amiga's expansion port so that, once it is fitted, an external RAM expansion can still be added. ***CR***

Q

AI – what's it about?

I am at college studying for three A-levels and have recently acquired an A500. What sort of programs do I need to store my college work where it is easily accessible? Could you make some recommendations? My Amiga has been upgraded to 1Mb.

In the Introduction of the users' manual supplied with the A500 there is a brief mention of artificial intelligence. Could you pass on any information you have on this subject and on the subject of robotics for the Amiga, and also any useful addresses?

Caroline Mathews
St Austell
Cornwall

A

You don't say what sort of work you want to store on your Amiga. If it is mostly text, then a word processor is your best bet. You can type in all the information you want, lay it out and easily retrieve it whenever you like. If you have a printer, then you can also get permanent copies of assignments and so on. Two word processors worth a look are *Protext 5* at £149.95 from Arnor (☎ 0733 68909) and *Wordworth* at £129.95 from Digita (☎ 0395 270273). There are, of course, many others on the market, but these are two of the better ones available.

As far as artificial intelligence is concerned, I don't know of any dedicated programs for the Amiga beyond the pseudo-intelligent *Eliza* type of program. This does nothing more than attempt to turn around whatever you type into something resembling a sensible reply.

Although the question of what exactly constitutes intelligence is a thorny one, I think it is safe to say that *Eliza* is most definitely not intelligent. If you want to embark on your own project, I suggest you get a copy of either Lisp or Prolog, both of which are used extensively in AI research. These are programming languages, so you will have to do a fair amount of work with them before you get your Amiga behaving in anything like an intelligent manner. There are no commercial versions available, but they can be obtained from the public domain. *AM XLisp* is on Fred Fish disk 181; *Stony Brook Prolog* is on Fred Fish 140. See the PD ads at the end of the magazine to find someone who stocks them. ***CR***

Q

Installing *KindWords*

After installing *KindWords* on to my A590 hard drive I am asked to modify the startup-sequence by adding the following three lines after the last assign line in the startup-sequence file:

```
assign KindWords: dh0:KindWords
assign SuperFont: dh0:KindWords
assign Dictionary: dh0:KindWords
```

How do I go about this using the Shell?

E Popple
Harrogate
N Yorkshire

A

It is irritating to have to do this sort of thing to get a software package running, but thankfully the process is fairly straightforward. To use the Shell, open your Workbench window and click on the icon labelled 'Shell'. If this is not present, then you are using an old version of Workbench. There is no need to panic, because you can use the CLI (Command Line Interface), which is similar but not as sophisticated. To access the CLI, open in the System drawer in the Workbench window and then click on the icon marked 'CLI'.

At any rate, a new window should now be open in which you can type text. It is a good idea to expand this window to take up the full screen, so you can see exactly what is going on.

The file you must edit, called 'startup-sequence', is stored in a directory called 's'. (Directories are the Shell's name for drawers – they are the same thing.) To get at it, you can use the text editing program, ED. Type in the following:

```
ED s:startup-sequence
```

ED will open up another window, in which you will see the text of the startup-sequence file. Each of the lines shown is a program instruction that is executed whenever the computer is reset. Using the down cursor arrow, move through the text until you come to the line reading 'loadWB delay'. With the cursor at the very beginning of this line, press [Return] and move the cursor up to the start of the blank line.

Then type in the three lines as instructed in the manual, pressing RETURN after each one. Be careful to insert spaces exactly as shown above. Once you have done this, press the [Esc] key, followed by X and [Return]. The modified startup-sequence file will now be written to your hard disk.

Next time you boot, *KindWords* will be properly installed. ***CR***

Q

Dimming power light

On a few programs and games, such as *Shadow Of The Beast* II and a PD music disk, when it has loaded I notice that the power light on the computer goes dim. Why?

Paul Cherry
Hollywood
Birmingham

A

The power light is connected to a part of the Amiga's sound chip called a 'low pass filter'. When this filter is active, it allows low frequency sounds to pass through unaffected, but reduces the volume of higher frequency sounds. This is useful for reducing the hiss of noisy samples. The power light is brightest when the filter is on.

When the power light goes dim, the filter has been switched off, allowing the sounds to come out unmolested. ***CR***

Q

Pascal isn't working

I recently got the *PCQ* Pascal compiler from the public domain. Unfortunately, I can't get it running. I have tried typing in the name of the disk in the CLI but that fails to load it. Could you please tell me how to run the program, as Pascal programming is essential to my college studies.

David Quigg
Lanarkshire
Strathclyde

A

Although documentation is supplied with *PCQ*, it can be a trifle confusing for the uninitiated. Frankly, you are in for a hard time if you don't have a working knowledge of the Shell.

Before any of the example programs can be compiled, they must be edited and changed. Do this using ED from the Shell. If, for example, you want to compile the Mandelbrot plotting program, change to the examples directory within the *PCQ* directory by typing:

```
CD AmigaLibDisk339:PCQ/examples
```

You might find the name of your disk is different, depending on the library you got it from. You can find this out by typing:

```
Info
```

then inserting the Pascal disk and pressing [Return] at the 'DEVICE:' prompt. If the name is different, then obviously you will have to use this name with the CD command. Now, to edit the example program, type:

```
ED mandel.p
```

All of those lines with a $I inside curly brackets have to be changed. These are 'include directives', which instruct the compiler to include fragments of code from other files. The problem is that the complete path of where those files are to be found has to be given with the include directive. In the case of *PCQ* as supplied, these paths are wrong. Change the first one from:

```
{$I ":Include/Ports.i" …
```

to:

```
{$I "AmigaLibDisk339:PCQ/Include/Ports.i" …
```

and make similar changes to all of the other include instructions. Of course, if your disk is called something other than 'AmigaLibDisk339:', you should use that name instead.

Incidentally, there is a bug in this program. The line saying:

```
S: ScreenPtr;
```

should be changed to read:

```
S: NewScreenPtr;
```

Once you have made the changes, press the [Esc] key, followed by X and [Return]. This will save the changes and quit the editor. It is best to have the program to be compiled in the *PCQ* directory. You can do this by typing in the following:

```
rename mandel.p /mandel.p
```

Go to that directory by typing:

```
CD /
```

Now you are ready to compile. The easiest way to do this is by using the 'make' utility. This is a clever script supplied with *PCQ* which automates the process of compiling, assembling and linking. Simply type:

```
make mandel
```

Note that the '.p' part of the program's name is omitted, because it is supplied by the 'make' utility. You can execute the finished product by typing 'mandel'. ***CR***

Q

Lost libraries

One thing that continues to puzzle me: you start with disks such as Workbench, Extras, and so on, packed with useful files, but when you come to use them there is no room for your own files. So you copy a program across to an empty disk and it doesn't work because it is looking for library files that are not there. Then comes the painful business of finding the lost files from the error messages. Hell's teeth! This was supposed to be a fun hobby!

Is there a copy-style command that finds and copies all the associated files?

Phil Bostock
Benfleet
Essex

A

There is a Shareware utility, called *WhatIS* that will detail all the files a particular program relies on. Sadly, it is still up to you to copy each one across individually. ***CR***

Q

Deluxe brush off

When I am designing a form using *Deluxe Paint* II, I make a brush to duplicate the form prior to printing out several copies of it on one sheet of paper. But then I seem to be locked into the brush and can't drop it in order to use other tools. How do I drop a brush (apart from shrinking it several times over until it vanishes)?

Also, I have two disks from Amiganuts. They are very good but they are copy protected. Thus, there seems to be no possibility of backing up the disks. Do all PD software houses do this?

Duncan Stewart
Clwyd
Wales

A

To get rid of a brush in *Deluxe Paint*, simply click on one of the pre-defined brushes (such as one of the different sized squares). If you should want your old brush back again, click with the right mouse button on the user-defined brush icon.

It is unfortunate that Amiganuts' disks are copy-protected, but this is far from the norm with PD houses. I suspect it is because a lot of the programs on Amiganuts' disks are licensed specifically to that company, which no doubt prefers to keep things that way. ***CR***

Q

A cure for the flickers

Having read a glowing report in a magazine (not yours) about *Pagestream* 2, off went my cash. How was I to know that soon I was to suffer a bad case of double vision from a flickering screen which resembles a magic lantern – the magazine forgot to point this out in its report. However, apart from a severe headache, I like the program but would like your advice on how to cure the 50-cycle jitters.

J Joyner
Lytham
Lancs

A

The flickering occurs because the program is running in what is called 'interlace' mode. This means that you can have twice as many lines vertically on the screen, but at the expense of your eyes. To stop this (and, unfortunately, halve the vertical resolution) you must take the following steps:

Click once on the *Pagestream* icon before loading it. Then go to the Workbench menu at the top of the screen and select the Info option. This will display a box containing various pieces of information about the program. One of the windows in this box is labelled 'Tool Types'. Using the up and down icons next to this window, scroll through the text until you come to a line saying 'Interlace=Yes'. Clicking inside this window will let you alter the text. Change it to say 'Interlace=No' (note that 'No' must begin with a capital letter). Now, when you run the program, the flicker will have flickered and gone. ***JW***

Q

Local user groups

Can you please give me any details of Amiga user groups in my area? I am a 65-year-old novice with a new A500 and have, up till now, taught myself what little I know.

TF Woods
Thorpe St Andrew
Norwich

A

We only know of one user group near you, and that is based in Bury St. Edmunds. It is a regional division of ICPUG, the Independent Commodore Products User Group. Meetings are held on the second Wednesday of every month. Contact Alan Morris, ☎ 0359 51355, for more information.

You could also try John Dale of the British Association of Computer Clubs, ☎ 0267 230 771, of which ICPUG is a member.

If there are any user groups out there who would like to be included in our listings, send your details to: User Groups, *Amiga Shopper*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW. ***CR***

Q

Protext mail merge

I have just about mastered writing a letter using *Protext* and, for my husband's business, I found that I was often having to write the same letter but to different people with a few minor details changed. It seemed sensible to try the mail merge facility. But can I get any sense out of it? Well, no, actually. I read the

continued on page 29

A590 Tips

Roy Bell of New Malden in Surrey becomes the deserving recipient of a fiver for sharing with us the following sage words of advice:

I have an Amiga 500 with an A590 hard drive. Because the hard disk came with Workbench installed, I have had very few reasons to boot from df0: – usually only after I have made my hard disk startup-sequence unusable. However, I noticed recently that the version message displayed when booting from df0: said "Workbench 1.3.2", but booting from the A590 it said "Workbench 1.3".

Ensuring that I had an up-to-date security dump of the hard disk, I copied the Workbench system from the floppy that came with my machine. It was easy to see that it was a different version because some of the file sizes had changed and certain commands – Diskcopy, for example – were obviously revised. The startup message, however, was still the same and investigation showed that it was merely a constant display. I have since included the Version command in my startup sequence, which shows both the Kickstart and Workbench version numbers.

The moral of this would seem to be twofold: first, some of you A590 owners may be running an older version of Workbench than necessary; second, do not rely too much on the message displayed from the startup sequence.

Also, I remember reading somewhere that because AmigaDOS commands are C programs held in the sys:c directory, they can easily be renamed. This can be very dangerous as software packages often have script files that call these commands. This may not be a problem when booting from df0: because a c: directory is normally provided on the floppy, but when booting from hard disk it can cause script files to fail because they cannot find supposedly standard commands. A better method is to insert Alias commands into s:shell-startup. For examples, 'alias md makedir' will enable you to use 'md' instead of 'makedir' when running from the Shell.

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chapter in the manual and decided to try the tutorial. It tells you that you should enter the following lines:

```
CO EXAMPLE1
```

I'm OK to here; it replies that 'so many' bytes are remaining in the buffer. Then it gives the following to type in:

```
PL 24
CP off
DF datfile1
RV name addr1 addr2 addr3 addr4 dummy
```

So I typed it in and all I can get out of it is 'Unknown command'. Am I just thick or what? The manual goes on about how simple mail merge can be, but I can't even get past the first line.

Frances Allison
Grimsby
South Humberside

A

No, you aren't thick: you've made a simple mistake because the instructions in the manual are not written clearly enough. You have been entering the lines while *Protext* was in command mode, whereas they should be entered while in the text entry mode, just as if you were typing an ordinary letter. Pressing the [Esc] key will switch the program between the two modes.

Don't forget that you need to create and save a separate file for this example to work. This file should be called 'Datfile', and should contain a list of names and addresses with each line separated by a [Return]. A further [Return] should be used to separate each of the addresses, like so:

```
Fred Bloggs
99 Bagshot Row
Bag End

Charlie Reallysillyname
101 Zeppelin
```

and so on. ***CR***

Q

Multiple disk drives

I have an A500, KCS Powerboard, Panasonic KXP1124 printer, and 3.5- and 5.25-inch external drives.

I have daisy-chained the 5.25-inch drive off the 3.5-inch, but when using Workbench 1.3 I cannot get the Format or Diskcopy functions to work properly. When I copy from the external 3.5-inch drive to the internal drive I have no problems, but when I copy from the internal to the external drive I get the message 'Disk is write protected', although it is not. When I disconnect the 5.25 drive the procedure works.

Can you please tell me what is wrong?

Stephen Mortimer
Tamworth
Staffs

A

The 5.25-inch drive is probably the culprit, and as far as I remember the Roctec units (the most common of the 5.25-inch Amiga drives) must be placed first in the chain or they cause no end of problems. There seems to be some argument over the terminating resistor packs – in other words, the through port is not quite as transparent as it ought to be. Re-arranging the order in which you chain your disk drives should cure your problem. ***MS***

Q

Shaky Shinwa

I can't get my old Shinwa CP-80 to work with my Amiga. It prints text but will not entertain graphics. Is there a specific driver for the Shinwa, or will I have to sell it?

Andrew Stott
Stockton-on-Tees
Cleveland

A

That certainly is an old printer and I have no idea which emulations (if any) it supports. It may be possible to use the CBM-MPS1000 driver which is intended for IBM emulations. That might work. Other than that … ***MS***

Q

Aggro with ARP

I have recently installed ARP1.3 and the ASH shell on my Workbench disk, but can't find out which commands are built in. The author says typing [?] should tell me, but all I get is 'unknown command '?'. Do you know where I can get a copy of the documentation?

Anon.

A

The documentation should be included with the ARP1.3 release disk in archived form in the docs directory. The built-ins are only available from AShell if its working properly. You must make sure ARP's Shell-Seg is in LIBS: and made resident during startup. If not, you will just get the default Shell – or even worse the default CLI. The internal ARP commands include the full set of script commands plus a couple of other goodies. ***MS***

Q

PSU problems

My question concerns the power supply unit that was supplied with my Amiga 500 (+512K RAM expansion). As well as the internal floppy, I also have a Cumana 354 external drive, and having just purchased the SAS C compiler I find myself prey to the dreaded 'disk swapping' syndrome and feel that a third drive would help. A hard disk is out of the question. Would the PSU take the extra load of another Cumana 354, bearing in mind that it is unlikely that all three drives would be 'driving' at the same time?

M Stevens
Queenborough
Kent

A

Officially, Commodore's PSU cannot take the load of another drive – and that, as they say, is pretty much that. In practice, CBM supplies two types of PSU: the little lump (5V @ 2.3A) and the big lump (5V @ 4.3A). The problem with extra drives is caused by the additional loading on the 5V line. Note this only applies to later micro 3.5-inch drives; not to many 5.25-inch drives, which also have a 12V motor line. If you have the big lump you should be OK, but the risk either way is yours. A better solution would be to lay out the extra cash on the double decker drive from Power Computing which has its own PSU and two drives. This would give you a total of four drives without needing to go to much extra expense. ***MS***

Cliff's Code Conundrum

So, craven caressers of computer keyboards, we meet again for another of Cliff's Code Conundrums. What could the problem be this month, you must be asking yourselves with feverish anticipation, just as I asked myself this very morning. Well, this month I would like you to write a program to play a tune using the Amiga's internal sound chip. Both the program and the tune must be your own work, as copyright of the winning entry will be given over to *Amiga Shopper*. As well as printing the winning program in a couple of months' time, we hope to include it on our next subscribers' disk. The tune should be no more than 32 bars long. Entries will be judged both on the quality of the code and on the quality of the tune.

Again, any dialect of Amigaspeak is permissible, but assembled or compiled programs must be supplied with source code. And don't forget to include any samples that you use on the disk. Send your submissions on an AmigaDOS floppy, along with an SAE if you ever want to see it alive again. The prize for the best solution is £50. Best, as we all know, is a subjective judgement. Mine, in this case.

Regarding last month's problem, I wonder if anyone noticed the added difficulty factor, otherwise known as Cliff's Code Conundrum Cockup? Yes, it was back to the time of Ptolemy as the masses of the Sun and Earth got somehow confused (rather like me). The actual values are:

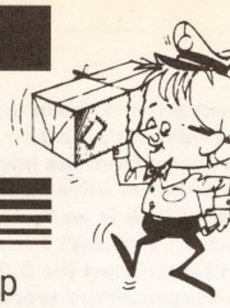
Sun: $M_S = 2.0 \times 10^{30}$ kg   Earth: $M_e = 6.1 \times 10^{24}$ kg

Anyone submitting a simulation in which the sun orbits the earth and the moon makes a very quick dive for the earth will be sniggered at (yup, same thing happened to me when I keyed in the previous values). You might also like to know the value of Newton's Gravitational Constant:

$$G = 6.664 \times 10^{-11}\ Nm^2kg^{-2}$$

The winning solution will be printed next month in order to give you time to get something together. Until then, happy hacking!

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Printer power

Mark Smiddy embarks on a major printer test this month, putting both 9- and 24-pin machines to the test: read on to discover his recommendations

BEGINNERS START HERE

If information can be displayed on screen, why do people need printers?

Well now, printers are used to get a hard copy of something – information, usually. Paper copy is more easily transportable than disks or computers, it is less likely to get destroyed and it can be hung on a wall as decoration. Most important is that human beings find it easier to understand and digest written information than text on a computer screen. Ask any writer how they check their copy. Most will tell you that they get a printout first, correct that, then make the changes on the word processor.

How do I go about choosing the right printer?

First, decide what you want it to do for you. If you just want to print draft quality documents, a 9-pin printer is quite adequate. For letter quality hard copy and good graphics, though, a 24-pin or laser printer is needed.

So, when I've got one, I just plug it into the Amiga and go, right?

Wrong. You'll need a printer driver, but there's usually a

continued on page 32

The Amiga is a great machine for playing games – there is no denying that – but you read *Amiga Shopper* for the machine's other side: its development as a serious home micro. To get the most from the machine, a printer is arguably one of the most important and potentially expensive peripherals you can buy – it is certainly one of the most popular.

Mono log

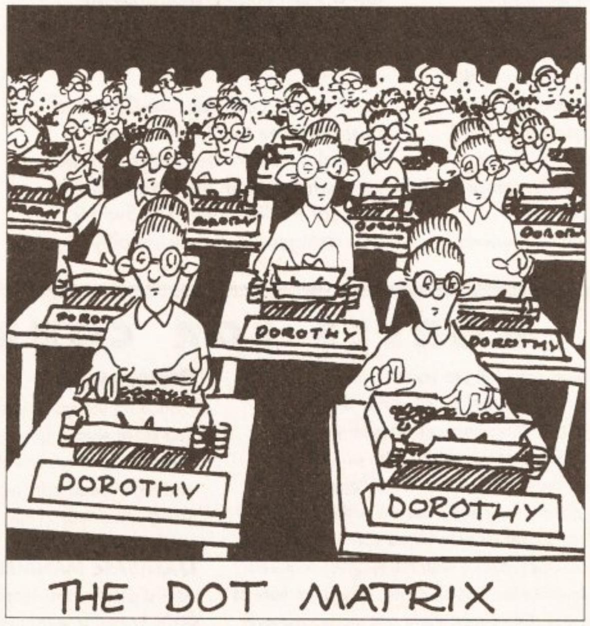
Although the Amiga is perhaps best known for its graphics, colour is of lesser importance when it comes to printing. This test is aimed purely at finding the best general purpose printer in terms of price and performance. That involves a number of criteria: paramount here is value for money. Can a cheapo 24-pin machine really out-perform a good 9-pin model, or are those extra bits just a red herring? Do you really need a good range of fonts? Is it true that a 24-pin is quieter in use than a 9-pin machine? Do you need a multi-sheet feeder, adjustable push-pull tractors and automatic paper parking?

In the end, what do you look for when you saunter into the shop and try to separate the good, the bad and the naff? This feature will blow away the mystique of printers and show you how to get value for money without wasting a wad on useless frills – all the printers tested where put through a comprehensive series of tests to find out just that. None of the machines performed badly, although a couple were a little disappointing in terms of noise and build quality. The summary chart may look a little daunting, but the important points are explained elsewhere in the text. So, stand by for a pin-punishing, ribbon-rattling printer probe.

continued on page 32

"Buying a printer can be something of a frought affair. There are loads of printers to choose from out there and everyone will try to tell you that theirs is best on the market. I'm here to dig through the advertising hype and help you find the best and most cost-effective machine for your needs."





Producing hard copy used to be rather labour intensive until computerised printers came along. Isn't technology wonderful?

JARGON BUSTING

ASF: Auto sheet feeder. A mechanism for automatically loading single sheets of paper into the printer. Essential for mail merging.

CPI: Characters Per Inch. The number of characters that can be printed in one inch of paper.

CPS: Characters Per Second. The speed at which the printer outputs. Beware, though, that the figure can be misleading.

Descender: Part of the character printed below the imaginary baseline. Lowercase letters, such as 'g' and 'y', have descenders.

DPI: Dots Per Inch. The number of dots the printer can print in one inch. This is usually expressed in horizontal and vertical measurements, so 360x180 dpi means 360 dots along every inch by 180 dots every inch down the page.

Elite: Character measurement of 12cpi. See CPI.

LPI: Lines Per Inch. The number of character lines printed in every inch, usually either six or eight.

LPM: The number of complete lines printed in one minute.

MTBF: Mean Time Before Failure. The number of hours that will elapse on average before something gives up the ghost. Most machines tested here have a quoted MTBF of 4,000 hours. That means many years of printing performance.

NLQ: Near Letter Quality. A method of printing by which characters are printed in two passes. Only half of the character is printed each pass so the dots can be run into each other reducing the dotted effect typical with dot-matrix printers. This technique is usually used on 9-pin printers.

Pica: Character measurement of 10cpi. See CPI.

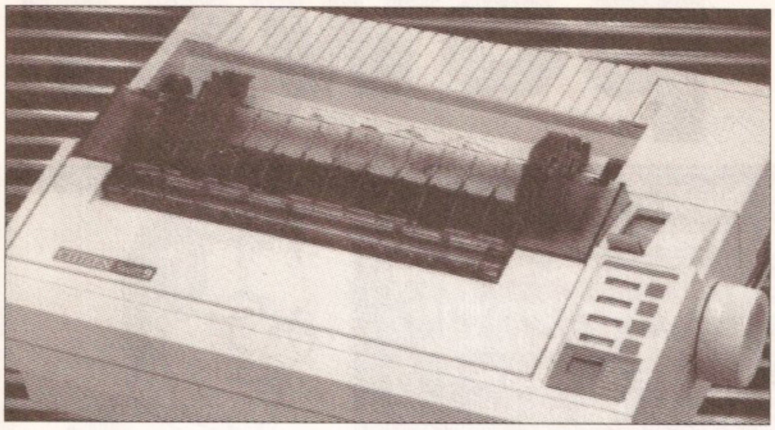
PPM: Pages Per Minute. The number of printed pages per minute. This normally applies to laser printers; the results given in this article should be for worst-case scenarios.

Sans Serif: Any font which does not have any extra flowery serifs attached (sans – without).

Serif: Extra "flowery" bits added to characters in certain fonts to make them look more attractive. Times is a typical serif font.

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CITIZEN SWIFT 9



Not exactly aesthetically pleasing, but damned good nevertheless.

The Swift 9 is the first in a series of quality budget machines from a manufacturer which is starting to carve a significant niche for itself in an already overcrowded market. I have already seen the quality of the Citizen disk drive mechanisms and their world-first, a mass-market third-height 3.5-inch floppy disk drive.

The Swift printer range comprises four models: 9- and 24-pins, monochrome and colour. However, unlike some manufacturers I could mention, the 24-pin machine is not just a 9-pin engine with a 24-pin head. And even then, the 9-pin model is a worthy competitor in this crowded sector.

No one could accuse Citizen of designing the Swift 9 for visual appeal. On pure aesthetics it comes somewhere down the bottom of the list near the Pinwriter. The Swift 9 was designed with functionality rather than looks in mind, and it carries this off extremely well. The sturdy cream box, finished off with a smoked plastic cover, looks and feels like it is built to take punishment. I was tempted to test just that, but the editor pointed out that this model is a competition prize (see page 11).

Fiddle about

Setting up the machine initially is less easy than, say, the NEC Pinwriter (see later) because you have to fiddle around with messy little DIP switches. Nevertheless, the printer's default settings are adequate, if not perfect: Epson emulation, UK character set, 11-inch forms, draft font, monochrome. Access to the switches (and optional serial interface) is gained through a lift-away door at the top-right corner of the machine – a position which does little to enhance the printer's aesthetics.

The manual is another typical example of "Amiga, what's an Amiga?", in that Citizen recommends the use of a special interface for Commodore computers – in other words, that part of the manual was written back in the days of the PET, VIC 20 and C64. Surely five years or

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HORSES FOR COURSES

As a serious Amiga owner, you will use your machine as a tool – for business/home use to run a word processor or a database, perhaps. Some will use it for programming. Maybe you let the kids draw pictures on it. Some of you might even produce newsletters and fanzines on it using *Professional Page*. All of these applications are almost completely useless without a printer of some description. To discover what facilities you will need, then, I'll list a few typical applications with the features required. Most of you will want to do at least some of these, so take note of what applies closely to you. Of course, there are many crossover points involved where the same feature is useful for many jobs.

WORD PROCESSING

For a printer to be of any use here, it must have an NLQ (Near Letter Quality) font of some description. Times or Helvetica are ideal, but there are thousands of possible variations on the theme. Remember, NLQ is not the same as double-strike or bold printing, and cheaper printers – especially 9-pin models – cannot mix the three styles. Many Amiga word processors (*Kindwords*, *Pen Pal* and so on) are actually word publishers. That is, they have their own internal fonts and drive the printer in its graphics mode. In theory, this should give a lot more flexibility, but it relies a great deal on the graphics performance of the printer and, especially, its associated software driver.

In practice, this mode is often less useful for important correspondence, writing to bank managers, potential employers and so on, than a printer's internal NLQ. This is quite simply because the printer is in graphics mode, so the "banding" usually associated with graphic dumps becomes part of the printing and, not to put too fine a point on it, looks darned ugly.

Also, you will probably want to print on single sheets for the final copies, but use tractor-fed paper for the first few drafts. This is where the paper parking feature now found on many better machines comes in handy. It allows you to automatically move the tractor paper out of the way and load single sheet in a couple of quick steps. And if you are sending out a lot of correspondence, a sheet feeder is essential.

PROGRAMMING

Producing listings of your programs is often the easiest way to find those elusive bugs and hone the code until it runs like velvet. The primary requirements for programming are a clear draft font and high speed printing. This will allow you get those 50K Basic listings on paper in next to no time.

DATABASE MANAGEMENT

At first glance, the neophytes among you may well wonder what use a printer is with a database. In fact, a printer is an essential requirement for most applications, because the whole idea of storing data in a database is getting it out when you need it. Typically, you will need to produce letters (via a mail merge to a word processor) and the mailing labels to stick on the envelopes. For this, the printer must have a clear paper path (labels are well known for fouling paper feed mechanisms), an accurate tractor feed, and an adjustable head gap with plenty of space available. Other requirements are generally the same as for word processing and programming.

ACCOUNTS

To do this properly you will need to print multi-sheet forms: customer copy, file copy and accounts copy, all in one go. For this reason, like databases, the head gap must be adjustable and the adjustment level must be easily accessible.

GRAPHICS

As I mentioned earlier, there are more uses for graphics than just printing pretty pictures. However, if you want to do just that then you will need a machine with a good print density and one which the Amiga's drivers support. It's no good getting a printer which is capable of 360x360dpi if the Amiga's driver will only manage 180x180dpi. Recognising this, several manufacturers, notably Citizen and Canon, are known to have specially commissioned Amiga drivers for use with their machines. To sum up, if you intend using your printer for outputting graphics, make sure the driver can handle what you want.

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bundle of these supplied on your system disk. A printer driver enables software to talk to your printer without even knowing what the printer is capable of. As far as the software is concerned, you could have anything from a cheap 9-pin to a really whizzo laser. It doesn't matter either way; the software sends the information and the Amiga does the rest. At its simplest, a printer driver is more or less a translation table – a sieve, if you like.

The Amiga thinks in terms of NLQ, draft, underlining, bold and so on and the printer driver converts that into language which the printer can understand. This information is stored temporarily in the printer buffer until the printer is ready to deal with it. Printer buffers are FIFO (First In-First Out) buffers and can be thought of as leaky buckets. Data is poured into the bucket at the top and dribbles slowly out of the hole at the bottom. In practice, the printer blocks the hole from time to time until it is ready to process more information.

If the Amiga sends data faster than the printer can process it, the bucket can get filled so the printer sends a message to the Amiga (by a process called handshaking) telling it to stop the flow of data. When some of the data has been used, the printer sends another message to the Amiga to get it to start sending data again. But watch out. In some cases, notably high-density graphics printing, the 'buffer full' signal can persist for too long, confusing the Amiga.



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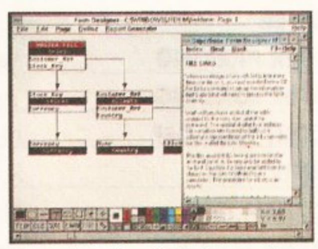
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more of the Amiga is enough to make someone out there realise that it has a parallel port?

This ring-bound tome is also typical of Citizen's weird layout – A4 in height but only 2/3 A4 wide. (There must be a reason for this – answers on a postcard please.) Other than that, it's a fairly typical example of printer manuals in that much of it is about as useful as an A-Z of igloos would be to a pigmy. The illustrations are less than clear and the text is terse in places. Fortunately, the machine itself is good enough to avoid these problems and could probably be assembled and operated by a small team of well-trained apes (like the editorial team).

Living with the Swift 9 is a dream because it delivers performance that is on a par with machines which cost twice as much just a few years ago. By far the best feature, and what would certainly sell it to me, is Citizen's unique menu control panel. By operating a simple slide switch, you can call up one of four different menus. Each menu has four buttons, which gives 16 functions in all – 18 if you count the dual function park/load and form/line feed. You simply switch to the menu you want, make a change and switch back again. In each menu, tiny lights reflect the current settings.

Paper park

Thanks to the band tractors (also found on the NEC), paper parking and loading is simpler and much more reliable than on the old Star LC-10. Three paths are offered: push tractor (the most common form), pull tractor – useful for heavy paper and multi-forms – and bottom feed. The latter, though available without adding any expensive bits, requires a special printer stand. A handyman with a saw, some patience and an understanding wife could, no doubt, modify the kitchen table to suit. Also, swapping from push to pull tractor is simpler than with the NEC machine once you have the knack.

By switching to the Cut Sheet mode, forms can be dropped in one after another with no hint of complaint. This model also takes a

PRINTER FEATURE CHECK ● PRINTER FEATURE CHECK ● PRINTER FEATURE CHECK ●

MODEL	P20	124D	Swift 9	Swift 24	LX850
MANUFACTURER	NEC	Citizen	Citizen	Citizen	Epson
PINS	24	24	9	24	9 24
PRICE	£299+VAT	£249 +VAT	£239 + VAT	£365 +VAT	£229 + VAT
AMIGA EMULATION USED	Pinwriter	EpsonQ	EpsonX	EpsonQ	EpsonX
FONTS	Courier, Prestige Elite, Quick Gothic, Draft Gothic, Helvetica PS, Times PS, Bold PS.	Courier, Times and Courier LQ	Times, Sans Serif, Courier	Draft; Courier; Times; Helvetica; Prestige Elite; optional font cards available	Quick draft, Draft, Roman, Sans Serif available
PITCH	10, 12, 15, 17, 20	10, 12, 15, 17, 20	10, 12, 15, 17, 20	10, 12, 15, 17, 20	10,12, 15, 20
TRACTOR	Push/Pull	Push Only	Push/Pull	Push/Pull	Push only
RESOLUTION	360x360	360x360	240x216	360x360	240x216
EFFECTIVE RESOLUTION *	360x360	360x180	240x72	360x180	240x72
EMULATION	Pinwriters/ EpsonQ	EpsonQ/ IBM	EpsonX/ IBM	EpsonX/ IBM/NEC	EpsonX
FONT LOCK	Yes	No	Yes	Yes	No
INTERFACE	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt
BUFFER	8, 4 or 0.5K	8K	8K	8K	4K
PAPER PARKING	Yes	Yes	Yes	Yes	Yes
PAPER LOADING	Yes	Yes	Yes	Yes	Yes
SHORT TEAR OFF	No	Yes	Yes	Yes	Yes
PAPER FEED	Rollers	Rollers	Rollers	Rollers	Rollers
BOTTOM FEED	No	Yes (opt)	Yes (opt.)	Yes (opt.)	No
CRANK WIEGHT	Heavy	Light	Light	Light	Medium
SETUP	Menu	DIP	DIP	LCD Menu	DIP
DIMENSIONS (W;D; H) mm	440 x 342 x 160	402 x 320 x 130	402 x 320 x 130	402 x 320 x 130	445 x 339 x 141
TRACTOR WIDTH (mm)	89 to 279	101 to 254	101 to 254	101 to 254	100 to 254
FEEDER WIDTH (mm)	89 to 254	182 to 254	182 to 254	182 to 254	182 to 257
WEIGHT	8.4kg	5.5kg	5.5kg	5.5kg	5.8kg
COPIES	1 + 4	1 + 2	1 + 3	1 + 3	1 + 2
INPUT POWER @	Rear	Rear	Rear	Rear	Rear
INPUT DATA @	Rear	Right	Right	Right	Rear
POWER ON @	Right	Left	Left	Left	Left
OPTIONS	ASF	ASF	ASF, colour	ASF, colour	ASF, Pull tractor,roll pap

* Apart from the NEC model, all the other printers' effective resolutions are lower than their possible resolutions due to limitations in their printer drivers.

cut sheet feeder, which is available as an optional extra.

Output quality is excellent (for a 9-pin) and the print speed is fast enough, although I am in two minds as to the usefulness of the Quiet option. This prints draft mode in two passes instead of one and NLQ in four – the idea being that less stress is exerted on the pins so they make less racket. In practice, although human ears can hear the difference, the noise is still a bit wearing after a while. Similarly, the high-speed feature only makes a noticeable difference on long print runs. Worst of all, the paper thickness lever is tucked away alongside the ribbon cartridge making it difficult to get at if you have podgy pinkies.

Overall, the Swift 9 is an excellent printer and probably the best 9-pin around. Although the later Star machines look a lot nicer, the Citizen is easier to use and probably slightly more friendly. The manual? OK, it won't win any prizes from me, but when a printer performs as simply as this, who needs a manual?

continued on page 36

CHECKOUT
CITIZEN SWIFT 9

Features 17/20
The clear control panel scores highly for Citizen here.

Performance..........18/20
The Swift is one of the best 9-pin machines I have ever used.

Build......................13/15
Excellent – what more can I say?

Ease of use............18/20
That control panel makes it soooo easy.

Price 23/25
Excellent value for money.

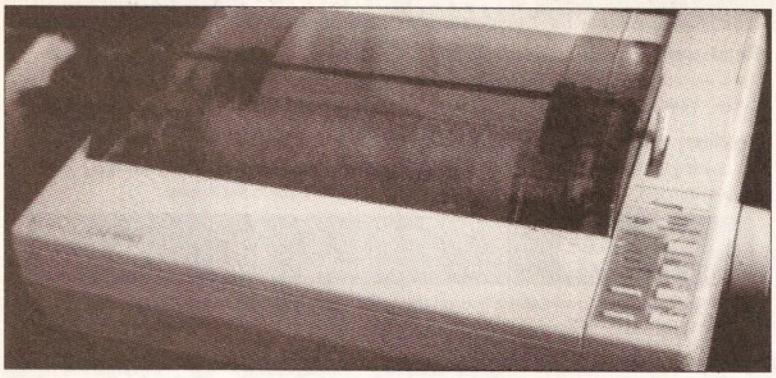
AMIGA SHOPPER 89/100
High marks indeed, and definitely a printer to be reckoned with in the future.

FEATURE CHECK ● PRINTER FEATURE CHECK ● PRINTER FEATURE CHECK ● PRINTER

	LQ400	LQ550	LC200	LC24	ML380
1	Epson	Epson	Star	Star	Oki
2	24	9	24	24	
3	£229 + VAT	£319 + VAT	£259 + VAT	£259 + VAT	£329 +VAT
4	EpsonQ	EpsonQ	EpsonX	EpsonQ	EpsonQ
5	Draft, Roman, Sans Serif. optional font cards optional multi-font card available	Draft, Roman, Sans Serif Script	Draft, Sans Serif, Courier, Orator,	Draft, Sans Serif, Courier, Orator, Script	Orator, Courier, Swiss. Optional font cards available
6	10,12, 15, 20	10, 12, 15, 20	10,12 17, 20	10,12 17, 20	10, 12, 15, 20
7	Pull only	Push only	Push/Pull	Push/Pull	Push only
8	360x360	360x360	240 x 216	360x360	360x360
9	360x180	360x180	240x72	360x180	360x180
10	EpsonQ	EpsonQ IBM	Epson X IBM	Epson Q IBM	Epson Q
11	No	No	Yes	Yes	No
12	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt	Parallel; Serial Opt
13	8K or 1K	8K or 1K	16K	16K	8K (40K)
14	No	Yes	Yes	Yes	Yes
15	Yes	Yes	Yes	Yes	Yes
16	No	Yes	Yes	Yes	Yes
17	Rollers	Rollers	Rollers	Bail arm *	Bail arm
18	No	No	Yes (opt.)	No	Yes (opt.)
19	Medium	Medium	Light	Light	Light
20	DIP	DIP	Keypad	DIP	Menu
21	390 x 320 x 139	418 x 347 x 140	440 x 334 x 135	440 x 334 x 135	398 x 345 x 120
22	101 to 254	101 to 254	100 to 294	100 to 294	76 to 254
23	182 to 256	182 to 256	100 to 250	100 to 250	76 to 254
24	7kg	6kg	6.3kg	6.3kg	7.7kg
25	1 + 2	1 + 3	1 + 3	1 + 3	1 + 2
26	Rear	Rear	Rear	Rear	Rear
27	Rear	Rear	Right	Right	Underside
28	Left	Left	Front	Front	Front
29	ASF, Pull tractor, roll paper	ASF, Push tractor	ASF, Roll paper	ASF, Roll paper	ASF, Pull tractor

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EPSON LQ-550



Epson's LQ-550 is a good machine, but is it really worth the price?

The Epson 550 is a compromise lying somewhere between a budget 24-pin machine and a more expensive high flyer. To this end, the machine supports a variety of features not found on the cheaper machines – like short form tear off and push tractor, plus options such as a pull tractor and font cards. This is, perhaps, where Epson has dropped a bloomer, since the machine pitches in at around the same price bracket as Citizen's Swift 24 (which is about another 50 quid) but lacks many of the more desirable options found on the competitor's machine.

The build quality and easy-to-use control panel are the real stars of this machine; likewise the easily accessible DIP switch array located just aft of the panel. In use this machine is a real dream; far and away removed from the nightmare days of the FX-80 (remember that one?). This machine, with its snazzy auto-loader, is a real beauty.

In use, the machine is fast and efficient, although surprisingly slow in terms of draft printing throughput when compared to the cheaper LQ-400. Print quality is as good as ever in both NLQ and graphics mode – the draft font, as readable as it always has been with Epson. Most notably, this machine appeared most sensitive to the weird EpsonQ printer driver supplied by Commodore and consistently performed better using its own Epson 9-pin emulation.

Although this is a good machine, I feel Epson could do better, and potential buyers may well be better off with the more expensive Citizen Swift 24 or the cheaper NEC P20.

CHECKOUT EPSON LQ-550

Features..................14/20
Nothing I'd write home about, really.

Performance 17/20
Like Pavarotti on television – it's better in Hyde Park.

Build......................14/15
Epson quality – what more can I say?.

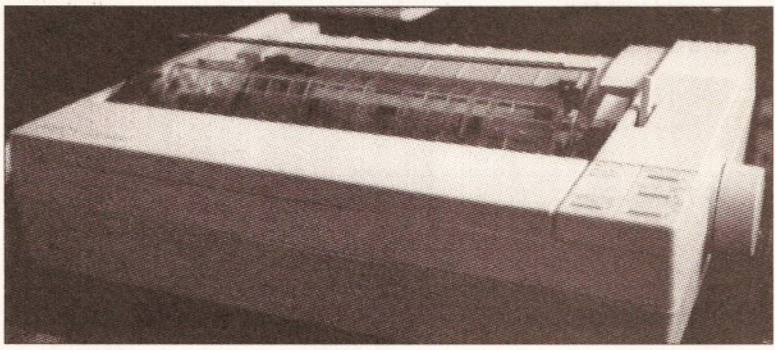
Ease of Use 16/20
Very little to complicate this baby.

Price 16/25
They must be joking!

AMIGA SHOPPER 77/100

A good machine, but it seems rather overpriced for the facilities it offers.

EPSON LX-850



The LX-850: a perfectly adequate 9-pin printer, although nothing special.

The Epson LX-850 is a low-cost 9-pin machine aimed firmly at entry-level printer users.

This essentially cheap printer has a solid feel – until, that is, you come to switch from tractor to single sheet feed. This plastic lever flexes so alarmingly in use that it appears to be constantly threatening to snap clean off. In all fairness, modern plastics can probably withstand this type of stress – but it looks bad.

Initial setup is provided by DIP switches tucked away in the side of the machine, and after that many functions can be performed in software or by Epson's SelecType control panel. The down side is that the usual LED display has been replaced by a bell function. (LEDs are only used for Power, on-line and paper out.) This is OK for setting typestyle but a bind when you need a quick reminder which font is in use.

On a lighter note, the manual is excellent – well, at least as the proverbial printer manuals go.

The choice of fonts is limited, and most of the work must be done in software – although this is no problem for the Amiga. Print quality is acceptable for a budget 9-pin – certainly better than the Star machines and on a par with the Citizen printers. For the money this is a good little all-rounder – although a bit on the noisy side for a 9 pin, especially while printing graphics.

CHECKOUT EPSON LX-850

Features..................10/20
The control panel is more show than use; envelope printing is a handy facility.

Performance 15/20
Acceptable for a cheap 9-pin machine.

Build......................10/15
Generally good overall, but the paper selection lever is a bit naff.

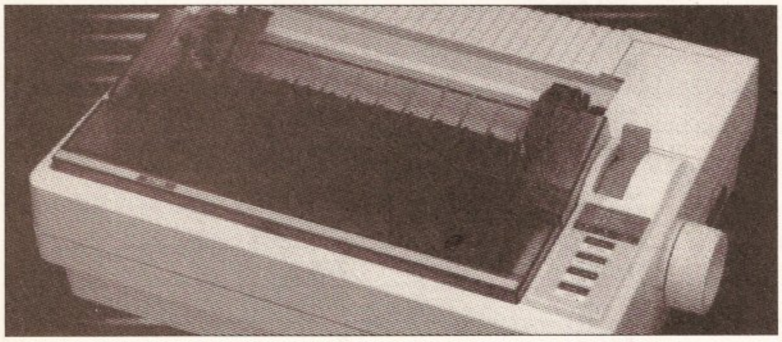
Ease of Use 13/20
Simple to use, but limited when more experience is gained.

Price 20/25
An adequate machine for the money.

AMIGA SHOPPER 68/100

Nothing to write home about, but it does carry the Epson name.

CITIZEN 124D



The Citizen 124D: a budget machine rated as "a worthy choice".

Citizen's 124D is the only true budget 24-pin printer in this test to offer facilities like paper parking and bottom feed.

Reflecting the low price, the 124D is a bit thin on the ground when it comes to fancy features like a massive range of internal fonts, clever programming and selectable tractors. Instead, Citizen has built a machine which has just those features you really need – paper park, optional bottom feed and, more important that 24 pin head. The result is a sturdy, easy to use work horse that feels like it can deliver the goods.

Setting it up is a doddle. The documentation is pretty sparse but this machine is really so simple to use that it can be assembled and mastered in a couple of minutes.

Features such as paper parking and the quiet mode have been incorporated into the printer. In effect you end up with a machine which is as reliable and easy to use as either of the Swifts yet as affordable as a good 9 pin. Print quality is very good although the machine is a little slower than its more powerful brother. If you need a no frills machine with the guts to withstand everyday use, and deliver the performance when you demand it, this is a worthy choice.

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CHECKOUT CITIZEN 124D

Features.....................8/20
Not a lot, but that's not what you are paying for...

Performance 18/20
Excellent – what more can I say?

Build......................13/15
Just like the two Swift machines – very good indeed.

Ease of Use 19/20
They don't really come much simpler that this one!

Price 23/25
One of the cheapest high-performance 24-pin engines around.

AMIGA SHOPPER 81/100

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HD only	849	919	1039	1149
XT Bridge Board	999	1069	1189	1299
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	Alone	2MB RAM on HD contrller	2058 board pop to 2MB	8UP board pop to 8MB
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- ★ High quality solid perspex computer dust cover..................RRP £14.95
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TOTAL RRP £68.80
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Citizen 124D *(24-pin, 144 cps draft, 48 cps LQ)*	£209.00
Citizen Swift 24 *(24-pin, 192 cps draft, 64 cps LQ)*	£299.00
Citizen Swift 24X *(24-pin, 15" carriage version of Swift24)*	£399.00
Star LC10 Mono *(9-pin, 144 cps draft, 34 cps NLQ)*	£155.00
Star LC200 Colour *(9-pin, 180 cps draft, 45 cps NLQ)*	£220.00
Star LC24-10 Mono *(24-pin, 180 cps draft, 60 cps LQ)*	£215.00
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Star LC24-200 Colour *(24-pin, 200 cps draft, 67 cps LQ)*	£295.00
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The NEC Pinwriter P20's styling is pleasing, if a little bulbous, with the multi-function control panel slightly indented in the facia giving way to the rounded edges of the box. Top left, the paper feed and thickness selection levers afford easy access, yet feel solid without being overly bulky. Paper loading is simple thanks to the modern, bail-arm free design and extra paper guide built in to the head carrier.

Configuring the printer for use is performed with a menu-based system built in to the machine's own firmware. This is definitely simpler (and more powerful) than the more conventional technique of setting DIP switches, but tends to be a messy business. The menu is long, with changes being echoed to the printout. The idea works well once you get used to it, and thankfully the default factory settings are enough to get you started. However, I was left reminiscing about days long past when we all worked at teletypes and VDUs (monitors) were luxuries we could only dream of.

The manual is about par for the course, no better and no worse than any of the others I've seen. The illustrations are clear and concise but a little more description would have been useful in some areas. For once, though, it would be marvellous to hear from a manufacturer who has heard of someone other than IBM. This rap on the knuckles, incidentally, applies to everyone featured here – not just NEC.

In use, the P20 delivers just the sort of performance you might expect from a good quality 24-pin machine at a price you might reasonably expect to pay for a colour 9-pin. Here, areas where solid reliable design has given way to luxuriant looks come to the fore. Not only was the P20 one of the quietest machines tested, it delivered good quality output in a short time. Another plus point was the user-configurable buffer size, which ensured that the Amiga did not start its infamous "Printer in trouble" song and dance act.

If nits have to be picked with the P20, the only obvious flaw lies with the tractor feed. There is nothing wrong with the tractor unit itself, but swapping from push to pull tractor is fiddly and getting back again is a nightmare. The problem lies with the release mechanism when the unit is fitted for pull tractor. Once engaged in pull position, it holds on tighter than a one-armed trapeze artist. Removing it involves flexing the plastic so much it looks in danger of splitting – definitely not for the faint-hearted. Thankfully, this is something few users will want to do on a regular basis.

Also, the control panel is based on touch-sensitive buttons – more the sort of thing I would expect to see on a budget-printer, not one that exudes quality like this one. Some would argue that there is nothing wrong with these, indeed, they may be preferable to 'real' buttons. At the end of the day, this is more personal taste, and I prefer buttons.

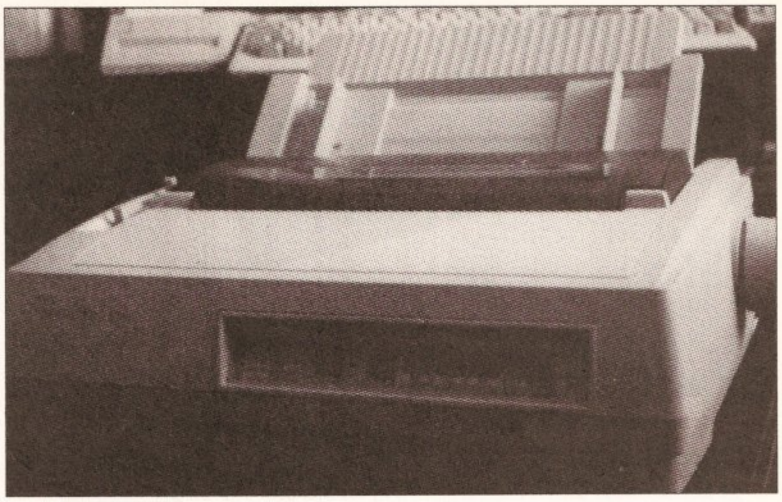
Caveats aside, the P20 is a good, solid printer which scores highly on quality and robustness. Although the styling is a little dated, it should enjoy a long and useful life and is one machine I would happily make a space for in my office.

continued on page 42

AWOL?

During the production of this article almost every printer manufacturer in the UK was contacted and asked to supply models for review. For the record, those failing to respond include: Seikosha, Olivetti, Brother, Toshiba, Canon, Panasonic and Mannesman Tally. Unbelievably, Commodore did not respond despite repeated fax and phone calls. Come on CBM – what are you frightened of?

NEC Pinwriter P20



NEC's P20: good quality output from a good quality machine.

The Benchmarks ● The Benchmarks ● The Benchmarks

We've all seen them. Those exaggerated claims given by printer manufacturers as to how fast their machines are. To see how well the printers on test performed, I tested them with a simulated, real-world throughput test. This involves sending each printer a text file consisting of a known number of characters and timing how long the print run takes.

To get realistic figures, each printer was forced to print a complete line (79 characters plus a line feed) so the head had to move the maximum distance without bouncing against the stop. These figures reflect the sort of performance you can reasonably expect to achieve. Note, many machines print slightly faster in elite pitch (12cpi). To get good overall performance, without too many figures, these results are based on averages between pica (10cpi) and elite. Timing starts from the moment the machine starts printing, and stops when the last character is output.

	Draft			NLQ		
	CPS	**PLPM**	**PPPM**	**CPS**	**PLPM**	**PPPM**
124D	109	83	1.3	34	26	0.4
Swift 9*	121/149	88/113	1.3/1.7	34	26	0.4
Swift 24	121	88	1.3	47	36	0.5
LX-850	106	81	1.3	24	18	0.3
LQ-550	109	83	1.3	47	36	0.5
LQ-400	121	88	1.3	43	33	0.5
ML-380	127	97	1.5	48	37	0.6
LC-200*	91/124	69/94	1.0/1.4	23	18	0.3
LC-24	130	99	1.5	51	38	0.6
P20	115	88	1.3	51	38	0.6

* Secondary results for LC-200 and Swift 9 are based on the high-speed draft option available from the panel.

CPS=Characters Per Second (typical)
PLPM=Printed Lines Per Minute (worst case)
PPPM=Printed Pages Per Minute (worst case)

Checkout
NEC Pinwriter P20

Features 15/20
Plenty of fonts and clever firmware give it an edge.

Performance 18/20
Superb output and respectable speed in all modes.

Build 12/15
Generally excellent, even if the styling looks dated.

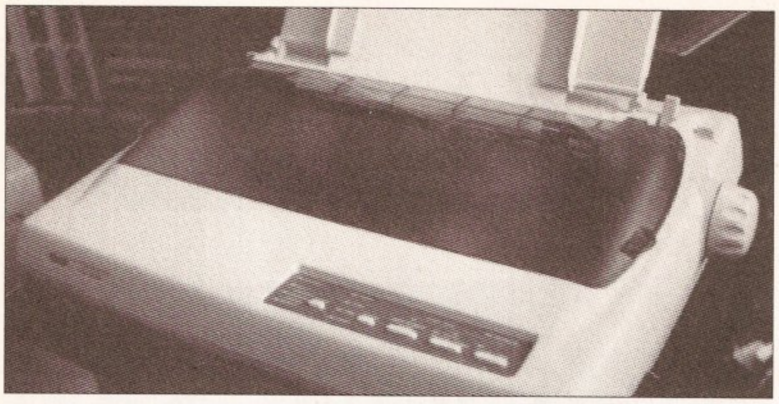
Ease of Use 15/20
Menu driven configuration is messy.

Price 23/25
You get what you pay for and you get a lot for the money.

AMIGA SHOPPER 83/100

continued from page 41

Star LC-200



Star's LC-200: the print quality leaves something to be desired.

The LC-200 is one of Star's new range of machines. Unlike the older models, the 9-pin version of the LC-200 comes as a colour machine as standard – although it does take the cheaper black ribbons for general purpose use. The 24-pin machine, although similar in looks and slightly improved specification, is supplied as either colour or monochrome.

In use the machine is delightfully quiet – not much louder than the fan noise emanating from my A590 hard disk. However, when put to the test the machine was disappointing in terms of raw performance. You can judge this for yourself by looking at the test figures – but this otherwise superbly engineered machine has been let down badly by lousy print speed. Given that this is a machine which glibly promises 225cps in draft mode, I was amazed to discover just how slow it really was.

At the end of the day, the deciding factor on which printer performs best is the overall print quality – and it is here where Star has consistently let itself down. The output quality – even with a new ribbon – is far too grey and light; this is something which Star really needs to address if it wants the LC-200 to be a serious competitor in the market.

Checkout Star LC-200

Features 18/20
Nice set of fonts – clear control panel.

Performance 10/20
Rather slow; output errs too much on the grey side.

Build 14/15
Superb, just what I'd expect from Star.

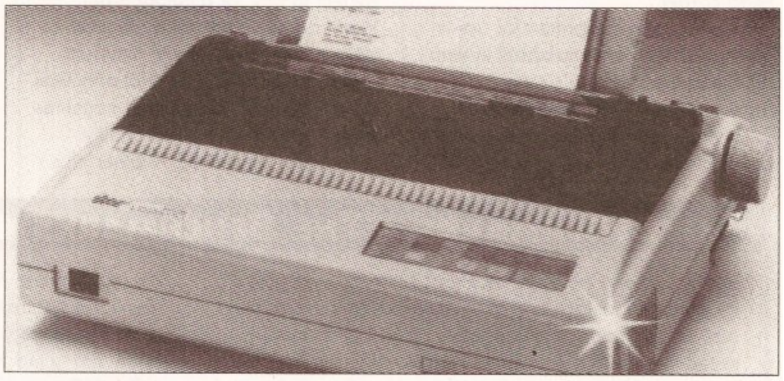
Ease of Use 15/20
Simple in day-to-day use; a little harder for special features.

Price 20/25
Reasonable performance, especially considering the price.

AMIGA SHOPPER 77/100

Usual Star quality, marred by low speed.

Star LC-24



The Star LC-24 is simple-to-use, fairly fast, and offers good quality.

The LC-24 is very easy to use; it has proper buttons on the control panel, for starters. Found here, too, is the new 'quiet' feature which reduces noise levels by about half.

One strange feature is the way the bail arm is driven automatically by the machine. In other words, when paper is being auto-loaded, the bail arm flips forward out of the way, popping back when the load is completed. This is fun to watch, if a little disconcerting at times – especially if you're used to manual operation. Certainly, the fixed rollers found on most of the latest designs are far more reliable and less prone to paper jams.

Like all the Star models, the LC-24 is dead easy to use and to get to grips with. The documentation is average, the control panel a cinch.

Print quality is fair; not the best of the 24-pin engines, but not the worst either (although, to be fair, most of the 24-pin machines produce very similar output quality). The machine tested best in terms of pure throughput, at just over half a page per minute in NLQ.

Overall, the LC-24 is a good, solid printer (haven't I said that before?) which should keep on going long after some have proved that there's more to MTBF figures than meets the eye.

Checkout Star LC-24

Features 18/20
Good font set; easy to get going. The 'quiet' feature is useful.

Performance 17/20
Clear characters and good blacks.

Build 14/15
Excellent.

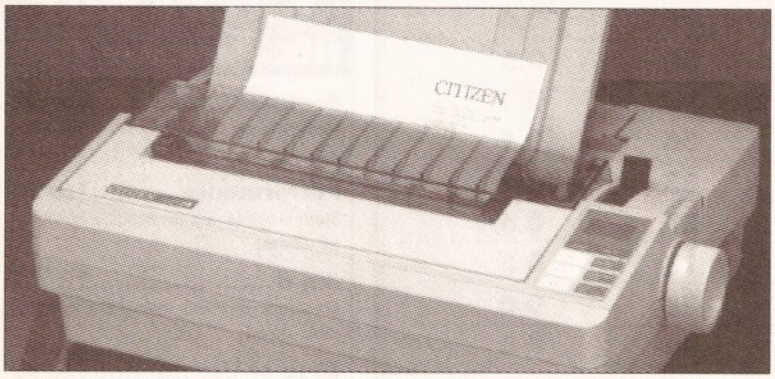
Ease of Use 15/20
A little quirky at first; but not bad once you're accustomed to it.

Price 20/25
OK for what you get, but not a particularly fabulous bargain.

AMIGA SHOPPER 84/100

Solid and reliable – a good choice.

Citizen Swift 24



The Swift 24 has good quality output but a confusing control panel.

The Swift 24 looks at first glance just like a 24-pin version of the Swift 9. Indeed, mechanically, little has changed between the two models – so any problems/advantages highlighted for the Swift 9 also apply here.

The major change is the dual function control panel. The DIP switches found in the cheaper machine have been removed to make way for extra font cards; and default settings now have to be programmed through the control panel. Once again, the default settings are good enough to get started with, but changes are initially extremely tricky to make. There is no doubt that the firmware and electronics behind this design are superbly clever but they are anything but intuitive. In fact, the menu system employed on the Swift 9 is far easier to use and a darned sight more friendly.

Print quality is very good – as it should be – and there is less evidence of banding on graphic dumps than with the 9-pin model. In letter quality mode too, the Citizen delivers the goods, although the range of fonts is not as good as the NEC Pinwriter. Optional font cards are available but none were available for this test. The Swift 24 is a superbly engineered machine for the money, but I think that control panel could be improved – it really is too complex.

continued on page 44

Checkout Citizen Swift 24

Features 19/20
The LCD control panel is a neat idea – but hard to get used to.

Performance 16/20
On a par with the rest of the bunch – darned good.

Build 13/15
Like its little brother, excellent – what more can I say?

Ease of Use 15/20
Yeeeeek! Technophobes should certainly avoid this one!

Price 22/25
A great machine with great performance.

AMIGA SHOPPER 85/100

Not quite as good as the cheaper model, but...

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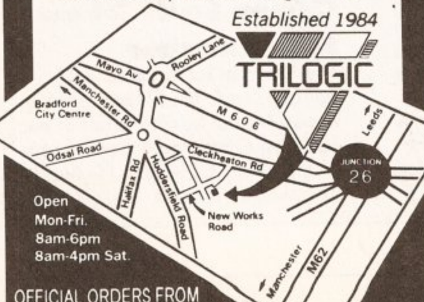
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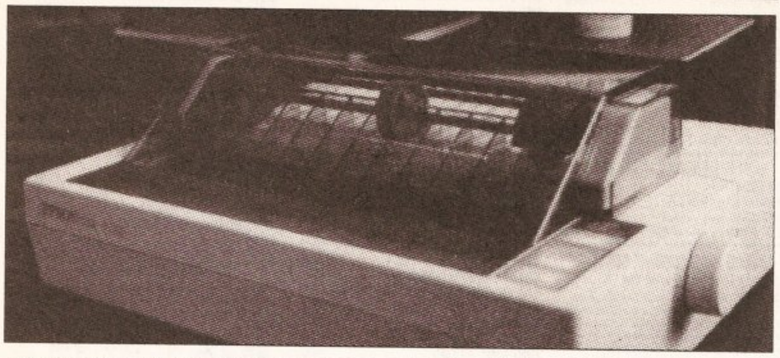
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continued from page 42

Epson LQ-400



Low in price, the LQ-400 is good value, but is a little lacking in features.

The LQ-400, Epson's budget 24-pin machine, is firmly targetted at the lower price bracket, with a recommenced retail price which is £10 below even the Swift 9 and £20 less than Citizen's own budget machine. Because of this, machine is about as vanilla as they come – fancy features like a band tractor and paper parking have been removed to make way for a 24-pin machine that comes in below the competition on price and yet produces output easily as good as a machine costing twice the price.

In direct comparison to its nearest rival, the 124D, there would not seem to be much to choose between the two – and the Epson is cheaper. In practice though, some compromises have been made which do put this machine somewhere behind its rival. The circular tractor is a pull only affair mounted just over the platen assembly – and has to be completely removed before the machine can be prepared for single sheets. This also costs the machine the benefit of paper parking – now surely a must on all but the very cheapest models.

Having said all of that, in an environment where most of the printing is done on either single sheets or continuous stationary, this machine could quite happily do the job – with an obvious cost saving. The precarious mounting and design of the pull tractor unit, however, does mean that this machine is not likely to be good at printing labels – the paper path is much too bumpy. In such a case the 124D, with its bottom feed, would be a much better bet.

Print quality is as good as the Citizen machine. Overall, this is a good little performer, and although it would not be first on my shopping list, it will probably find itself in a lot of homes.

Checkout
Epson LQ-400

Features....................7/20
Not much – you get what you pay for...

Performance 17/20
...and it performs well for the money.

Build 12/15
Cheap, but solid – like all good budget machines should be.

Ease of Use 15/20
Switching to condensed from a DIP is a real faff.

Price 23/25
What do you want, blood?

AMIGA SHOPPER 74/100

Great stuff from the 9-pin masters – even if this one has 24!

Shopping List

NEC UK ltd
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Citizen Europe ltd
Wellington House, 4 - 10 Cowley Road, Uxbridge UB8 2XU ☎ 0895 72621

Star Micronics UK ltd
Star House, Peregrine Business Park, Gomm Road, High Wycombe, Bucks HP13 7DL
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Oki Microline 380



Oki's machine has a lot to recommend it – except its outdated looks.

The Oki Microline 380 is an Epson/IBM compatible 24-pin print engine with less flash and more balls than many of the machines featured here. However, on the face of things it is one of the most expensive machines featured here and a bit of an ugly duckling. Weighing in at nearly 8kg it's one of the heaviest, too. Although I cannot claim to be familiar with Oki's earlier offerings in this class, it appears that the 380 is a rejigged version of an earlier design. Much of its voluminous size seems wasted in comparison to the sleeker offerings from Star and Epson. Nevertheless, I was impressed by the routing of the data cable, which fits under the machine as opposed to sticking out the side or back.

Setting up the machine for use with single sheets is a doddle; loading tractor feed paper is something else entirely. Normally you can just drop the paper on to band tractors, shut the covers and press the load button. Not with this machine, buster. For some strange reason, two paper guides are fitted just aft of the tractors – and the paper jams unless it is fed through these first.The manual, which on the whole is not bad, could have been clearer on this point. Given the location of the tractors, this is likely to cause quite a number of mishaps.

In use, the ML-380 is a relatively fast machine with a good quality output and some nice internal fonts. But when almost everyone else has gone over to fixed rollers in place of bail arms, Oki has retained them. I have nothing against bail arms, but two minutes using the newer roller method convinced me that they should stay firmly in the past. AS

Checkout
Oki Microline 380

Features.................17/20
A fair number, but the pull tractor is an option, not standard.

Performance 18/20
Very good output quality in NLQ and graphics...

Build 10/15
...but it feels flimsy when used.

Ease of Use 12/20
Docked four points for difficult tractor loading.

Price 17/25
Verging on expensive for what it offers.

AMIGA SHOPPER 74/100

Performs well, but it looks dated.

Thank you, darlings, thank you

I would like to thank the following for their help and cooperation in the production of this article. Joe De Brincat (InfoTech Cleveland); Dave Stebbings (BT Cleveland); Rosemary Gacki (Wanda Int.); Joyce Morris (Epson UK); Douglas Millard (Star); Ravi (NEC).

Citizen 124D

AMIGA SHOPPER **BEST BUDGET BUY**

This little baby is really in a class of its own. Not the best machine around, but it delivers 24-pin performance at a 9-pin price. In fact, the improved graphics performance makes this the budget choice for word publisher freaks.

Best 9 pin Buys

Star LC-200 and Citizen Swift 9
Nothing to choose between these. The Citizen comes out slightly better on performance, the Star is better on looks. At the end of the day, there is little other than price to separate these two.

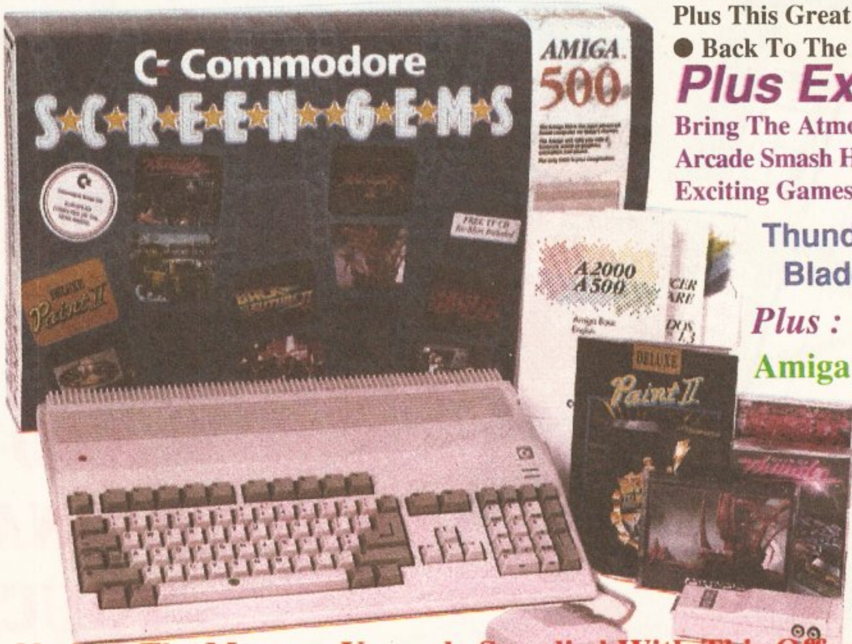
Best 24 pin Buys

Citizen Swift 24 and NEC Pinwriter
The Pinwriter looks dated but performs well, the Citizen is more expensive but has some rather neat features. Once again there is very little to choose between the two – the decision is yours.

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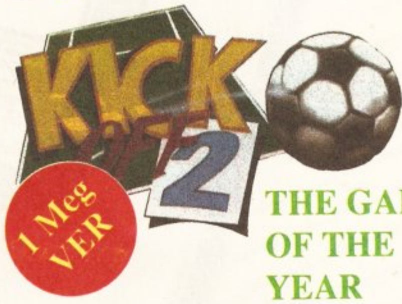
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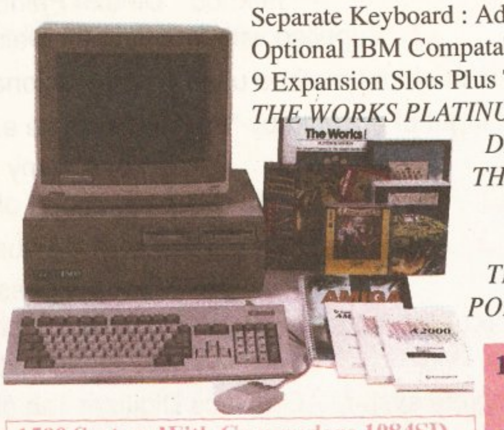
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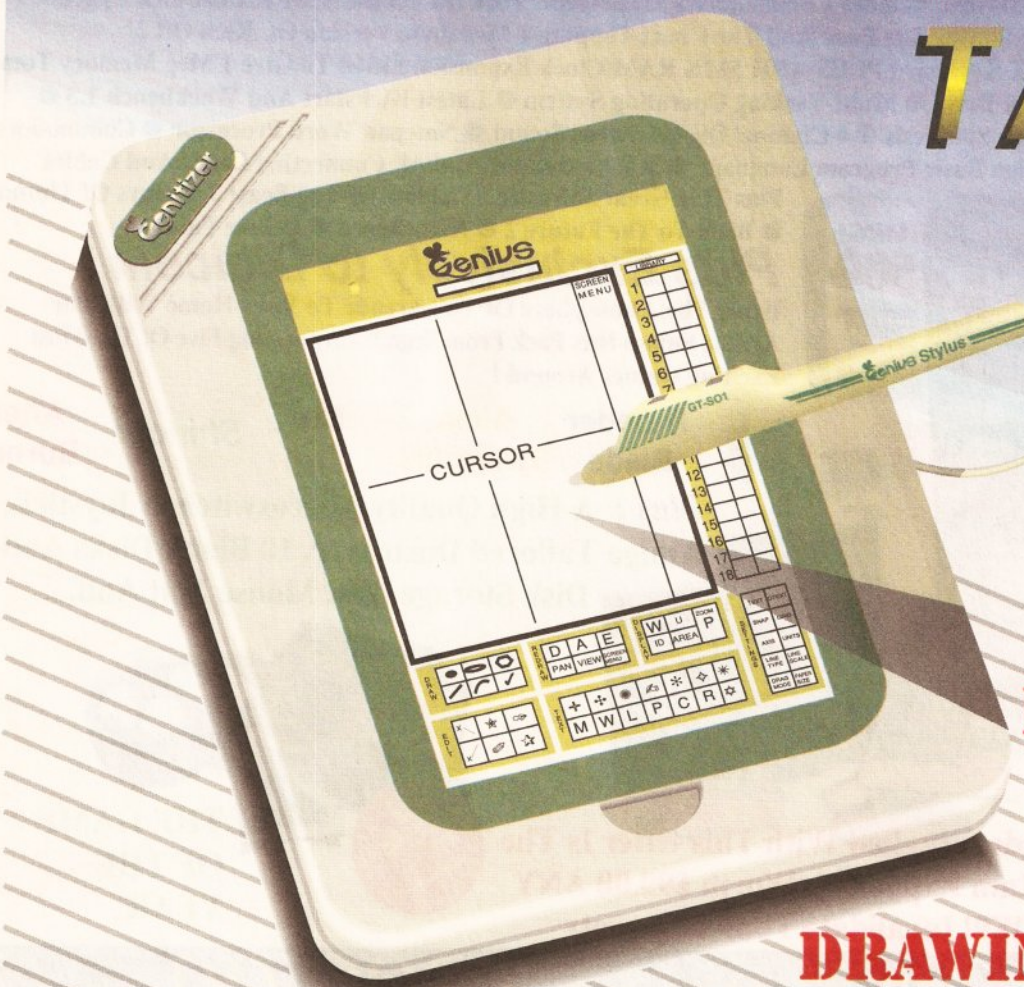
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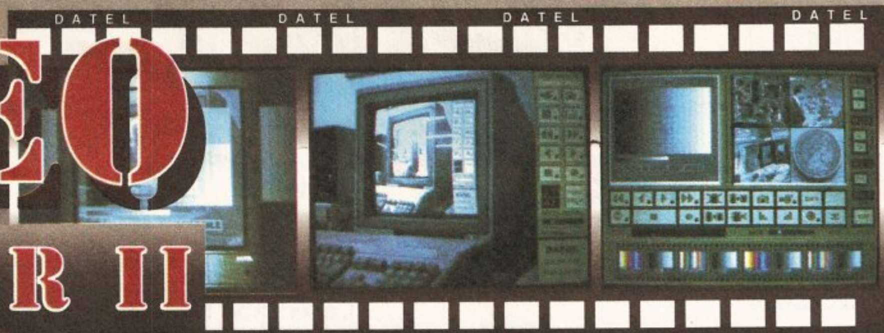
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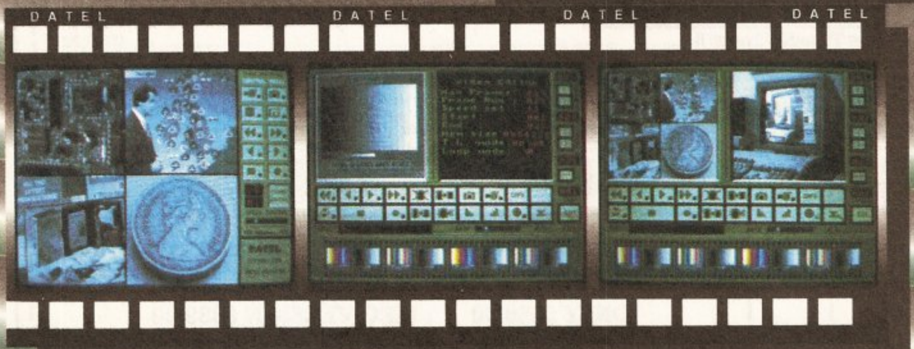
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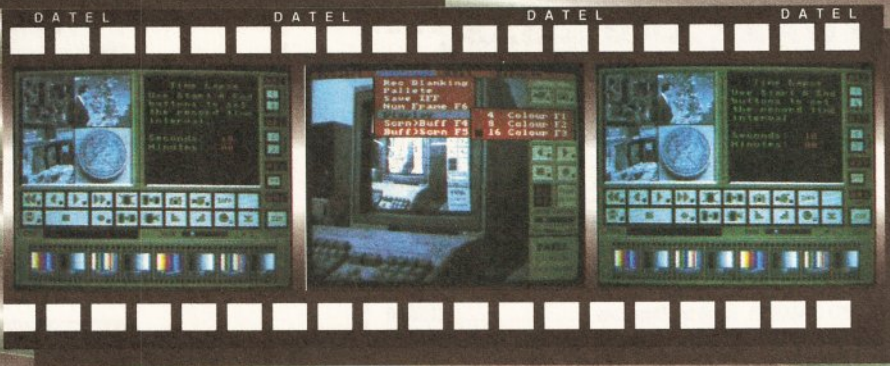
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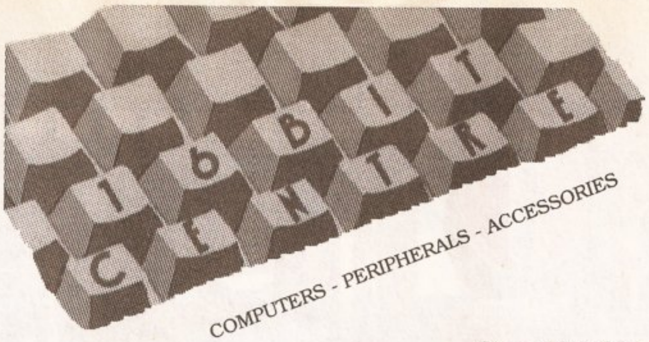
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For what it's worth

Jeff Walker pokes his finger into the nooks and crannies of Digita's new Wordworth word processor



"A word processors is one of the staples of desktop publishing, and the more cost-effective it is, the better. £130 for Digita's new offering is a lot of anyone's money, so let's find out what *Wordworth*'s worth."

Jeff Walker

Of all the great English poets, if any one sums up the beauty and wonder of the perfections and imperfections of natural things it has to be William Wordsworth.

Throwing aside the popular romanticism and violent politics of his contemporaries, Wordsworth avoided poetic didacticism and instead concentrated on giving charm and novelty to everyday things. His originality and mass appeal to prince and pauper alike eventually gained him the highest accolade of poet laureate. *(Get on with it – Ed.)*

Digita International, by calling its new word processor *Wordworth*, is unashamedly attempting to associate it, if not with the poet itself, then with the originality and perfection he strove for and with the beauty and tranquillity of his words.

No doubt about it, Digita's *Wordworth* has a helluva big name to live up to.

Wordworth is packed with features – so much so that Digita calls it a 'document processor' rather than a word processor. This is a slightly confusing term. What Digita means is that *Wordworth* is much more than a traditional word processor – that is, it does more than just process words. There's a case for saying that it is closer to desktop publishing than word processing. Perhaps 'word publisher' would be a better description.

You've read about similar packages, you may even own one – programs such as *ProWrite*, *Excellence*, *PenPal* and *KindWords* to name but four. The big difference between these and more traditional word processors, such as *Protext*, *WordPerfect* and *Scribble!*, can be summed up in two words: fonts and graphics. (OK, that was three words, but you know what I mean.)

Pretty as a picture

The first time I loaded *Wordworth*, the shock almost knocked me off my chair. After selecting High Resolution from the Preferences requester (what the hell ... go for it!), there I was staring at a Times proportional font in the screen and window title bars. Times in the pull-down menus as well. Was I seeing things? Isn't this the new look only possible under Workbench 2? Obviously not.

Ah, but the screen was flickering away because I was running in interlace mode. So it was off to Wordworth's Preferences requester again to change back into flicker-free medium resolution and ... hello Topaz my old friend. Oh well, only to be expected. Times would have looked jaggy in med-res anyway.

It's a shame because *Wordworth* doesn't look anywhere near as sexy in med-res as it does in hi-res, but that's largely true of most Amiga applications software.

Tapping in a quick sentence reveals the default typeface: a tall, thin, non-proportional, difficult to read (in med-res) affair called Pica60. Soon change that – select Format/Typeface/Other and....

The point at issue

Wordworth utilises standard Amiga bitmap fonts for both its screen display and its printed output. Absolutely any standard Amiga bitmap font, of any point size, can be used. No restrictions. By using the supplied special screen fonts (the default Pica60 was one of them), it can also take advantage of your printer's built-in fonts.

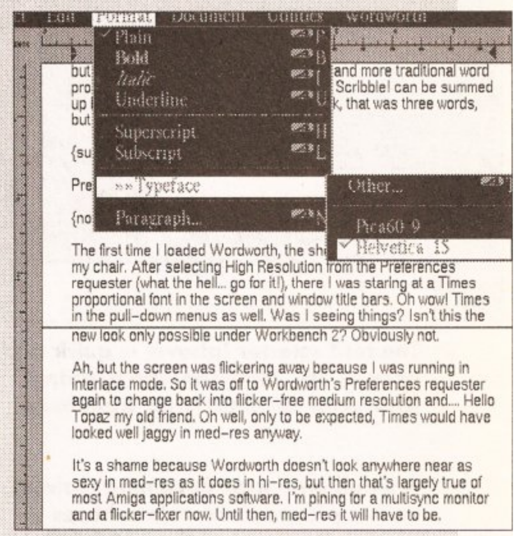
As you hit the keyboard, characters appear on-screen as fast as they can be typed in; perhaps a trained touch-typist might notice a very slight lag, but the rest of us are not going to get distracted by words appearing on the screen after we have stopped typing, or having to wait for the screen to catch up before being able to go back and correct a mistake. In this department *Wordworth* is plenty fast.

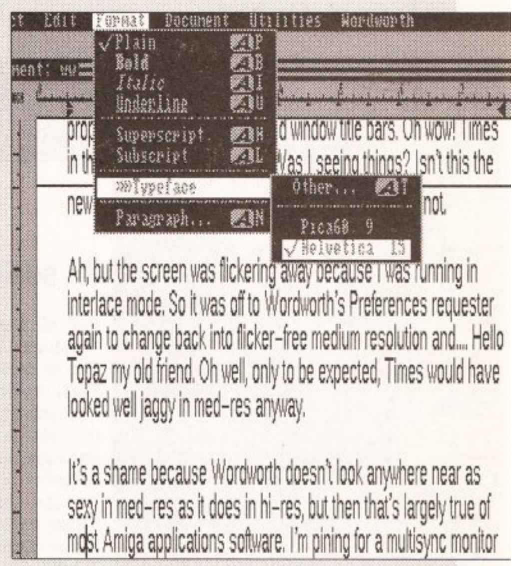
Words can be typed in any colour or mixture of colours; even the background colour can be changed, making WOBs (white-on-black) easy. Or yellow on blue, or orange on red even.

Fonts are chosen from a dialogue box which, by default, lists all the typefaces and point sizes in the FONTS: directory. A Show gadget lets you see what any font looks like, in case you've forgotten, and further gadgets enable selection of Plain, Bold, Italic or Underline (or combinations) at this point without having to change styles with another menu selection later. It operates in almost the same way as the font requester in *DPaint*, allowing you to select another font directory if you have, for example, a floppyful on a separate disk. The difference is that in its requester *Wordworth* allows adjustment of the space between characters (tracking).

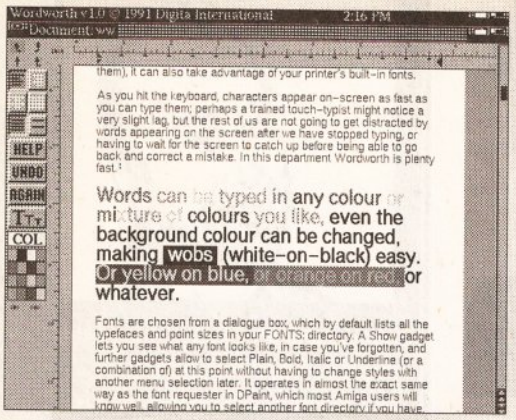
Digita supplies a number of special fonts with *Wordworth*. There are some non-proportional ones for giving a proper WYSIWYG display of the printer's Pica (10 characters per inch), Elite (12 cpi), Condensed (15 cpi) and enlarged (5 cpi) typefaces. By WYSIWYG I mean that the characters you see on-screen match the width and height (in relation to the page) of the characters your printer will print.

continued on page 50

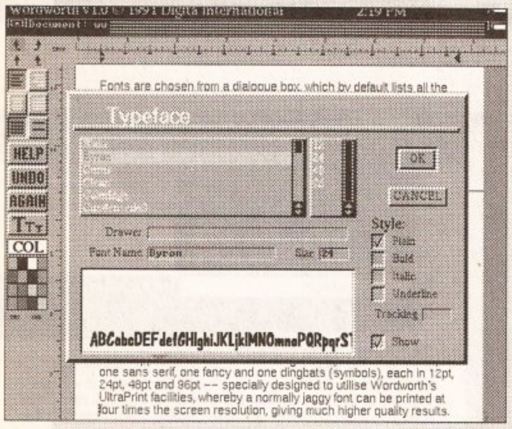




***Wordworth* is a delight to look at and use in high resolution (top), but the annoying flicker will almost certainly mean you'll be working in medium resolution (bottom) most of the time, in which text and graphics appear elongated.**



As well as being able to change the colour of any letter, *Wordworth* also fully supports Colorfonts (like those supplied with *DPaint* III).



The font selector (above) is quick and easy to use. Note that the tracking (character spacing) is set from here.

A small one-page document (below), with a picture in 16-colour hi-res mode eats up more than 600,000 bytes of chip RAM.

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Design-wise they look different, because different printers have different built-in fonts.

Also supplied are four standard Amiga bitmap fonts: serif, sans serif, one fancy and one dingbats (symbols), each in 12pt, 24pt, 48pt and 96pt and specially designed to utilise *Wordworth*'s UltraPrint facilities, whereby a jaggy font can be printed at four times the screen resolution.

This feature, unique to *Wordworth*, means that any standard Amiga bitmap font can be output at almost the highest resolution your printer is capable of. There's a bit more to it than this, plus a small catch – to display (and output) a particular size font under Kickstart 1.3 you need to have a file containing the correct size characters in that particular typeface. If you want, say, Helvetica 36pt, then you have to have a file called 36 in the Helvetica directory. Under Kickstart 2 things have changed. Fonts are re-scalable, even bitmap ones. This means that to get Helvetica 36pt you only need one size of that typeface and the operating system will automatically scale it to the size you require.

So for UltraPrint to work under KS1.3 at its highest resolution it needs to have a font on-disk at four times the size of the on-screen font, which explains the four point sizes supplied with each of the Digita fonts.

As well as medium and high resolution, which affect the vertical resolution of the screen, *Wordworth* has two width resolutions: 60 or 80 dots per inch (dpi), which is a way of squeezing even greater resolution output from bitmap fonts. At its highest setting, UltraPrint prints at four times the screen resolution – an impressive 320 x 288 dpi to the printer when in 80 dpi screen mode.

The kind of document you want to create, plus the amount and type of RAM you have installed, have to be the most important considerations before buying *Wordworth*.

The program requires 1Mb, but remember that this is a minimum for the creation of simple documents. Long documents, multiple documents, colour and graphics will all require more memory. And chip memory at that, especially for multiple documents, colour and graphics.

As an example of how quickly *Wordworth* can gobble up memory, take a look at the image below left. *Wordworth* is running in 16-colour, hi-res interlace mode. The document is just a single page with a few words on it plus an IFF graphic (you can only see a bit of it). Chip memory usage is more than 600,000 bytes. On top of that, *Wordworth* will be using about another 400,000 bytes of fast RAM to run in.

OK, so we can conserve memory by using fewer colours and not running in interlace, but even if we manage to cut the chip memory usage in half you can see that we'd be sailing very close to the wind on a 512k chip RAM machine.

In fact, my example document, created on a 1Mb chip RAM B2000 (plus 6Mb fast), will only open in four-colour, med-res mode on a 512k chip RAM Amiga 500. Even then, *Wordworth* had to close down the Workbench. When using *Wordworth* to create large documents with colourful graphics, 1Mb of chip RAM plus another 1Mb of fast RAM is the minimum memory requirement.

For straightforward word processing, where all you're concerned with is bashing out words, 512k of chip and 512k of fast is plenty. With a second floppy drive fitted and booting from the *Wordworth* disk you are left with about 350k RAM in total, 90 per cent of which is chip.

JARGON BUSTING

ASCII: **American Standard Code for Information Interchange is the data storage code commonly used for text files.**

IFF: **Interchange File Format is a means by which graphics and sound data are stored on the Amiga so they can be swapped between programs.**

INTERLACE: **is a method used to double the apparent vertical resolution of an image by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen. Unfortunately, interlace screens flicker.**

WYSIWYG: **What You See Is What You Get, as opposed to word processors whose screen display bears little resemblance to the output they produce.**

Graphics

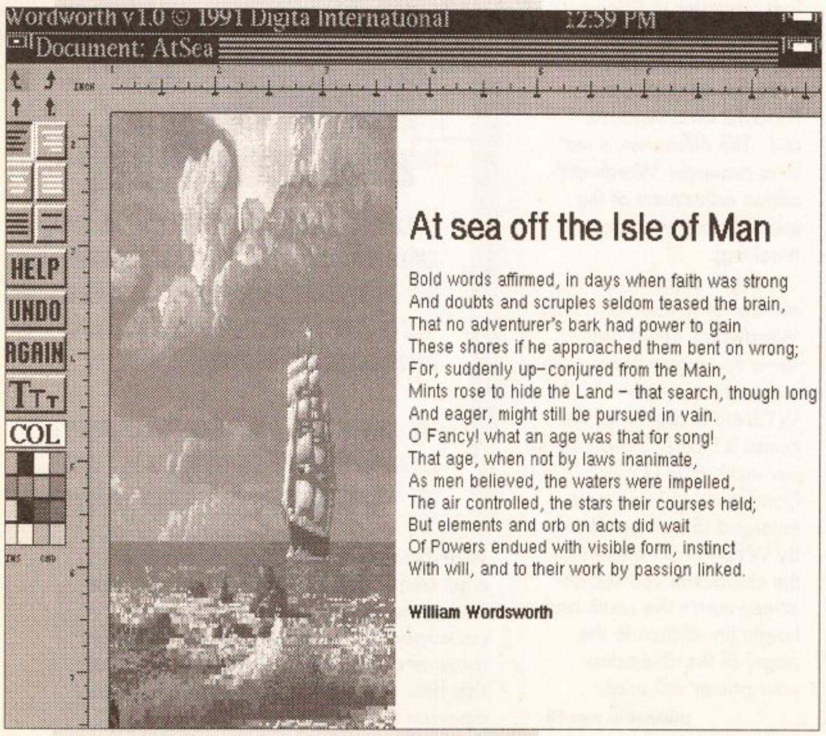
If an Amiga word processor has the ability to import graphics, then it needs to be implemented properly. At the very least it should import a good selection of IFF graphics formats at least up to 32 colours.

To keep within the true WYSIWYG spirit, graphics need to be displayed accurately on-screen (and printed) in as many colours (or grey scales) as the user chooses, which may well be fewer colours than there are in the original graphic. Also, users needs to be able to re-scale the graphic and automatically run text around it.

Wordworth can import all IFF graphics formats up to and including HAM. It can't handle 24-bit. Although *Wordworth* can import 32-colour, Extra HalfBrite (64-colour) and HAM (4,096-colour) graphics, it can only display them in a maximum of 16 colours. So HAM pictures, for example, get automatically translated into 16-colour images. A button allows you to use the picture's palette, which results in *Wordworth* mapping colours 4-16 to those most often used in the graphic. For HAM pictures the loss in quality is immense, but 32 and 64-colour graphics translate surprisingly well.

Loading times differ. From floppy, a piece of black-and-white clip art takes 10 seconds to load and appear on-screen and a 16-colour 640 x 512 picture takes about 90 seconds, while loading a 4,096-colour HAM picture takes six minutes. Selecting Use Pic's Palette adds between 30 seconds and two minutes to the wait.

Graphics load in at their correct aspect ratios. When working in med-res mode they may appear to be elongated, but this is due to the elongated shape of med-res pixels; when sent to the printer or viewed in hi-res mode they are the correct shape. Pictures can be re-scaled by grabbing one of the handles around the edge of the graphic and



dragging the pointer to the desired position. Holding down the Shift key while grabbing and dragging preserves the original aspect ratio.

The re-scaling and subsequent re-display of black-and-white clip art is almost instantaneous – 16-colour pictures take about 60-90 seconds; HAMs take a couple of minutes.

Scaling down is accurate enough, but enlarging a graphic results, not surprisingly, in blockier and blockier images. Scale a picture down and then enlarge it and the resultant image is almost unrecognisable. However you don't expect sophisticated graphics scaling features from a word processor, and the simple scaling facilities of *Wordworth* are going to be good enough for most users. If you want more power then you should really be looking to buy a DTP package.

Wordworth can run text around graphics in two ways. First there's the simple method of an automatic vertical boundary between the edge of the graphic (left or right-hand side) and the text. Alternatively you can cause the text to flow around the contours of the graphic. This works wonderfully well with black-and-white clip art, but more thought is needed with colour pictures because the contour-flowing is achieved by *Wordworth* making colour 0 of the graphic transparent, letting the white of the background paper show. If any details in the graphic use colour 0, these too will turn transparent, letting the paper shine through and making them look a little weird.

"No doubt about it, Digita's Wordworth has a helluva big name to live up to"

Like vertical runaround, contour runaround can flow the text around the left or the right of the graphic, but not both. The space that should be left between the graphic and the text – the 'standoff' – is user configurable for each graphic in the document.

If no runaround is selected, text can be laid over the top of graphics.

More thought is needed if the document has, say, two colour pictures in it with different, conflicting palettes. *Wordworth* has a Remap option which will attempt to create a new compromise palette. But the more colour pictures in the document with different palettes, the worse each is going to look (and print) after a remap.

But you'll probably be using black-and-white clip art most of the time, if for no other reason than because you don't have a colour printer and you know from experience that unless created with a grey-scale screen dump in mind, colour pictures look awfully muddy when sent to a monochrome printer, even one with lasers in it.

The right words

Wordworth's dictionary is the same one many other word processors use. Compiled by Collins, it is the English version and contains 110,000 words, including the usual 26,000 Merriam-Webster legal and medical supplement. There's a thesaurus as well, for those moments when you can't think of the exact word (comment, declaration, expression, remark, utterance...) you want.

Spelling checking proceeds at an acceptable rate; not that it's quick, but it is as fast as *Protext*'s spelling checker, which is no slouch.

For best performance, the dictionaries can be copied to RAM. Words are checked phonetically, which means if you spell something by how it sounds, *Wordworth* will almost certainly provide the correct spelling, provided it is in the dictionary, of korse. (*Wordworth* suggests: horse, worse, curse, coarse, course...)

The spelling dialogue box is easy to understand and use; the only slight criticism I have is that the process is slowed down by the program asking for confirmation every time you choose to save a word to your user dictionary. Considering the user dictionary can be easily and completely edited from outside of the spelling checker, confirmation is really unnecessary.

The thesaurus knows 140,000 synonyms for 30,000 words. There is no antonym or word definition facility; the former is an omission, but the lack of definitions is because Collins doesn't supply this module for the English dictionary, only the American one, which is downright daft of them. Word definitions are important for anyone who is not perfectly at home with the English language. For example, in the above spelling mistake, the user may only have a good enough knowledge of English to recognise that the correct spelling for 'korse' is either 'coarse' or 'course'; the final decision can only be made by looking up the definition of each.

And don't give me any hassle about looking them up in a dictionary. Using that argument, a computer dictionary and thesaurus become redundant.

On top of the dictionary and thesaurus, *Wordworth* has a Glossary utility. In this requester you can enter the phrases you use most often – your name and address, for example, or standard letter openings and endings. Double clicking a glossary entry inserts it at the current cursor position in the text.

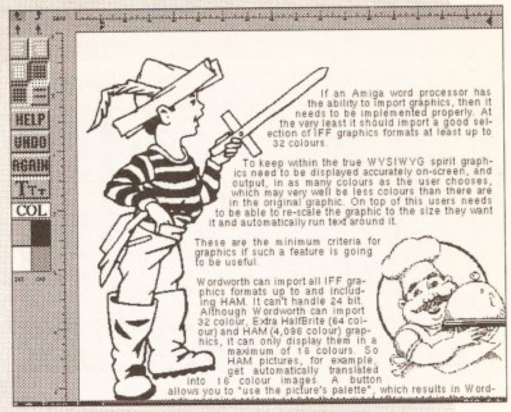
Wordworth is able to load text saved by other programs. It knows specifically about *WordPerfect*, *ProWrite* and *Protext*, plus it can import generic ASCII and IFF text. Any graphics in an alien-format document will be discarded, but type styles and paragraph formatting are preserved.

Wordworth's own file format is IFF, but a new type of Digita's own invention. From the document headers it appears to be called WOWO (like pictures are ILBM and music is SMUS). It adheres to the IFF rules, with all the relevant document information held in different chunks.

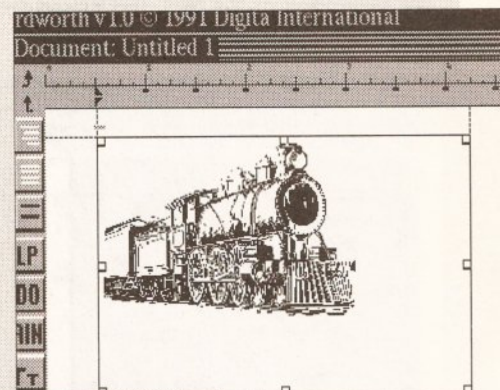
As all graphics in a *Wordworth* document are stored with text, file sizes can get huge, particularly if you have used many large colour pictures.

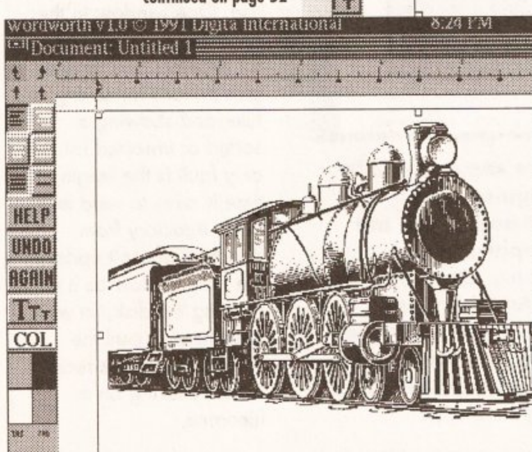
The alternative is to just store the information about

continued on page 52



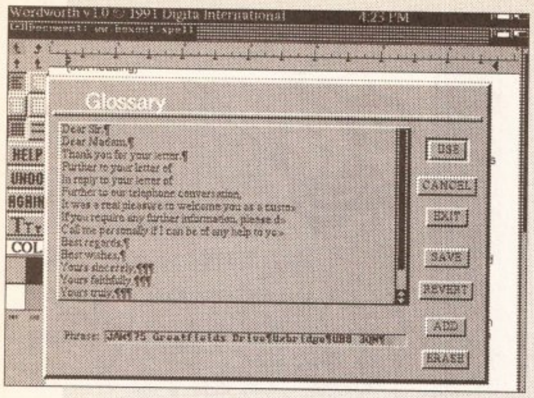
Contour flow is deeply wonderful. Printer fonts and graphics can be output to the same page by feeding the paper through once for the text and then again for the graphics. It's more accurate than you'd expect.



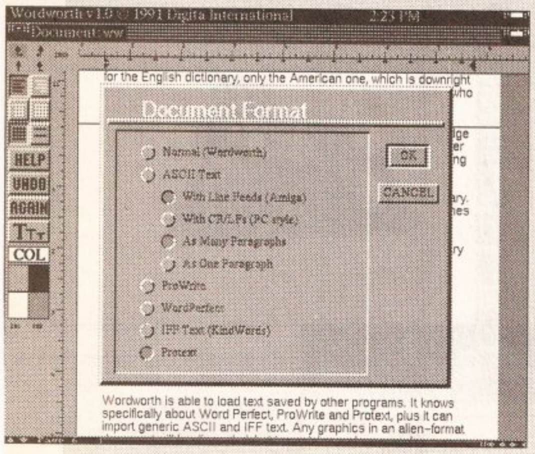


Scaling down is easy enough, but enlarging produces blockier and blockier pictures, especially if you enlarge a picture that has previously been shrunk.





The glossary is where you put all those phrases and paragraphs you use most often; names and addresses are the most obvious things to store here, but standard letter openings and endings are another idea. If you change the glossary and quit *Wordworth* without saving, you will be reminded of the fact and asked for confirmation to quit.



***Wordworth* supports some alien file formats. It will recognise style changes (bold, italic and so on) but will discard any graphics in non-*Wordworth* documents. Once the file format is chosen, *Wordworth* will save in that format as well, so make sure you change the file format after importing as (say) ASCII, unless an ASCII save is what you want.**

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which disk each of the pictures in the document is on and load them separately when needed. The advantage of this is that the document itself remains small, text loads quickly and graphics can be present in the document but 'unloaded' for speedier screen refresh and conservation of that most precious of gifts, chip memory. Also, because the pictures are not fixed to the document, neither are they fixed to the document's screen resolution and palette, so each picture can be output (but not displayed) in its original format and colours. The advantage of the way *Wordworth* does it is that graphics and text remain together, so you don't lose a picture because you can't find the disk it's on. Also, the smaller you re-scale a picture, the smaller the resultant file size.

Wordworth's file requester is a pleasure to use. One window in the requester for files, one for drawers and devices, plus options for setting a filter and showing a sorted or unsorted list. Its only fault is the length of time it takes to read in a large directory from floppy. It doesn't update the files window as it is reading the disk, so you have to wait until the whole directory is read before clicking on a filename.

Up to 100 multiple documents can be opened, memory permitting. Each document window multitasks, so you can be editing one while printing another. There is no option to merge one document from disk straight into another, although this can be got round by opening both documents, cutting the text from one and pasting it into the other.

Layout

Horizontal and vertical rulers are provided – both can be switched on and off and measurements can be in inches, centimetres, picas, points, pitch or pixels. All tab positions – left, right, centre and decimal – can be set by simply selecting which you require from a set of four icons, pointing at the horizontal ruler and clicking where you want them. Correcting a mistake is done by dragging the tab arrows along the ruler, or get rid of them completely by dragging them off the ruler.

Special para

There are two special markers on the ruler which are used for paragraph indents and outdents. The top marker sets the margin position for the first word in a paragraph, the bottom marker sets the margin for subsequent lines in the paragraph. By having the top marker set to the right of the bottom marker, outdents are possible, vice-versa for indents. By dragging the bottom marker while holding the right mouse button down, both margins can be adjusted at once while keeping their positions relative to each other.

A layout style for the whole document can be set or, by dragging a block over paragraphs, each can have its own style, allowing you to mix indents and outdents and tab positions freely. Once a paragraph's style has been set, further margin and tab changes to other parts of the document won't affect that paragraph unless it is highlighted.

Line spacing is adjustable. If you are using your printer's built-in character set, then you are effectively restricted to six or eight lines per inch, single spaced, single-and-a-half spaced or double spaced. *Wordworth* will let you select another type of line spacing for printer fonts (measured in points), but the output will be garbage.

Bitmap fonts can be line-spaced any way you like and will print as they are on-screen. Printer fonts and bitmap fonts can be mixed on-screen, even on the same line.

Justification is left, right, centred or flush. Automatic hyphenation is available (mainly of use with flush-justified copy) but its implementation is far from perfect. There is no exceptions dictionary, and you can't dictate the minimum number of characters to hyphenate after or before, so awkward word breaks crop up quite a lot. This needs to be improved in later versions.

Character spacing (tracking) can be adjusted for the whole font or for only the highlighted text. When flush-justifying, *Wordworth* uses the normal method of inserting extra space between each word; it cannot automatically compensate for large gaps between words on a line by automatically adjusting the tracking. Again, something for Digita to think about for later versions.

Paragraph spacing can be adjusted so that extra space is added before, after, or both before and after, each paragraph in the document or only those highlighted. This is an excellent feature which saves you pressing Return an extra time if you want a blank line between each paragraph. Using the paragraph spacing facility you can adjust spacing quickly and easily should you change your mind about document layout.

BLITS & BOBS

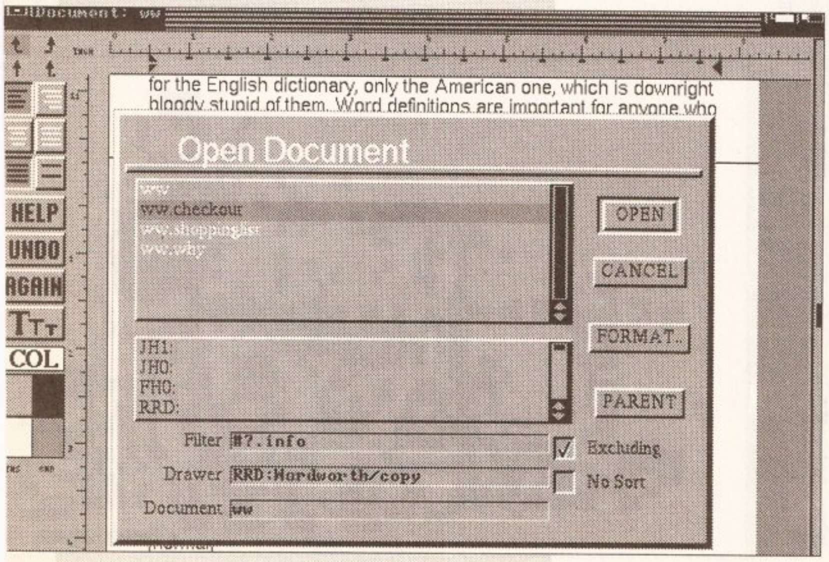
Originally Wordworth was called 'Quartz'. Huh? The reason for that name may have been crystal clear to the programmer, but not to the people he was working for. Digita boss Jerry Rhyll came up with the name 'Wordsworth', but the 'powers that be' won't let you register names as trademarks, so the "s" in the middle was dropped and Wordworth was born.

Headers and footers aren't forgotten. These form part of the top and bottom margins of a page; you edit them once and they get displayed and printed on every page in the document.

Alternatively, you can have different headers and/or footers for left and right-hand pages. There's also a button to let you switch off headers and footers for the first page of a document – handy for a title page, but if you want, for example, three or four pages of contents without headers and footers before the main document starts, there's no option for it. Neither is there an option to change the style or content of headers/footers mid-document.

Page numbering can be in one of five different styles: ordinary numbers, uppercase or lowercase roman numerals, or uppercase or lowercase letters (after page 26 it changes to AA, AB, AC and so on).

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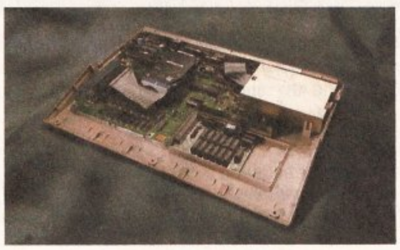
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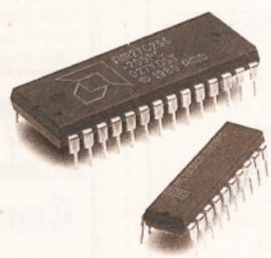
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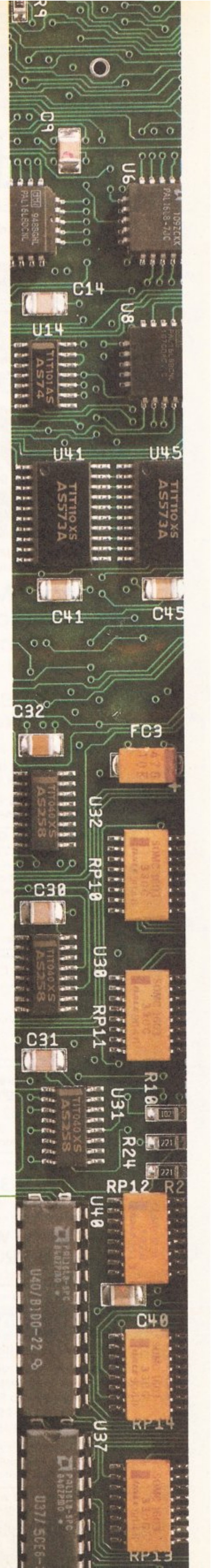
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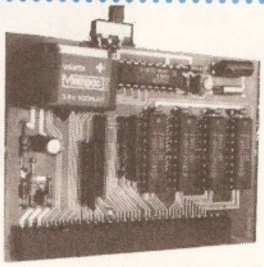
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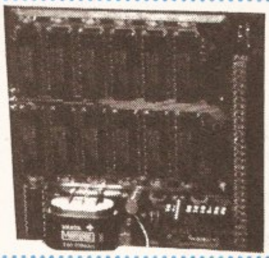
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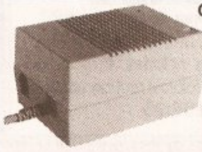
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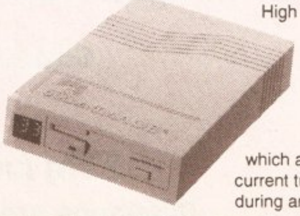
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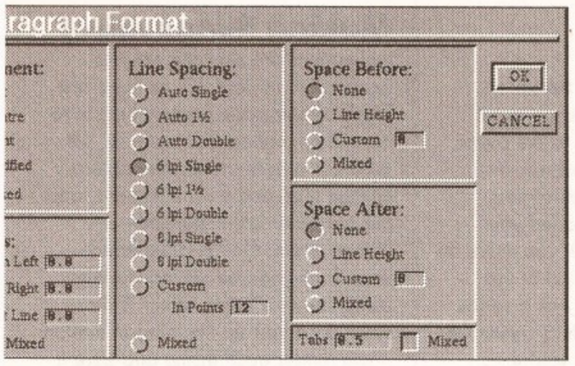
continued from page 52

You can select which page number to start with, so if you have written a book you can print it out with each chapter (saved and then loaded as a separate document) starting with the correct page number.

Time and date can both be inserted into your document header or footer, either as the current time/date (when the insert command was used) or as an updating time/date which puts a special control string into the text that gets replaced with the current time/date when the document is printed. British, American and European formats for time and date are available.

Editing

All the editing features you would expect from a word processor are there – cut, copy, paste, erase, find, replace, undo – even a tool called Again which repeats the last action selected from the Format menu; handy for changing the style of subheadings throughout a document.



Paragraph formatting lies at the heart of *Wordworth's* layout system. Each of the spells you see here can be cast on the whole document, a group of paragraphs, or just one paragraph. Tabs are set directly on the horizontal ruler.

Blocks are highlighted either by dragging the pointer over the desired text, or by holding down Ctrl and using the arrow keys. Words can be highlighted by double clicking on them; whole lines can be highlighted by triple clicking.

For those who don't like to take their hands from the keyboard while editing, there are hotkey shortcuts for every menu selection. Changing between multiple documents has to be done by mouse.

The numeric keypad can be configured so that PgUp, PgDn, Home and End do precisely that, or you can use the arrow keys in conjunction with Alt and Shift.

One point here. The Amiga convention to move to the beginning and the end of a line is Shift-left/right arrow (the way Intuition does it in the Shell and file requester string gadgets for example), but *Wordworth* uses Alt-left/right arrow. The Amiga convention to to go to the previous or next word is Alt-left/right arrow: *Wordworth* uses Shift-left/right arrow. The Amiga convention to move up or down a page is Alt-up/down arrow, whereas *Wordworth* uses Shift-up/down arrow, and so on.

Most popular Amiga word processors stick to accepted conventions – *Protext*, *KindWords* and *Scribble!* come immediately to mind. On the other hand, programs such as *ProWrite*, *PenPal*, *Excellence* and the HiSoft *Devpac/Basic* editor do it differently.

It matters not which is the best way to do it. What's important is consistency and it bugs me no end when Amiga developers ignore Commodore's programming guidelines and end up copying how somebody else has done it.

Mail merge

An oft-requested, though little used, feature of word processing packages is mail merge.

As well as its own built-in mail merge format, *Wordworth* can import data files created with *Superbase* and *Mailshot Plus*. And provided you know what ASCII characters are used to separate fields and records, any data file created by any database program can be imported and mail merged into a standard letter or document.

Prodata, for example, is quite popular but isn't directly supported. However if you Export data from *Prodata* using commas between fields (not wrapped in quotes) and carriage returns between records, *Wordworth* will import and mail merge the data perfectly if you enter 44 as the Field Separator (the ASCII code for a comma) and 13 for Record Separator (the ASCII code for carriage return). Funnily enough, these are the default codes for the Custom data file format.

But remember to choose ASCII from the Format button in the Merge Data File requester because *Wordworth* defaults to its own mail merge format, which is basically fields separated by tabs and records separated by carriage returns.

And so to bed ...

Heavens, there's so much to the package. Little distractions like the screen saver and the word puzzle toy. And if you're a teacher or a parent with a small child you may be interested in the fact that *Wordworth* has a speech facility. There's the excellent on-line help requester which has cross references to related subjects and page numbers in the manual. Did I mention that *Wordworth* will do automatic timed saves? Handy for hard drive users.

No expense has been spared on the manual. With screenshots, diagrams and examples throughout, it is split into an instruction book (tutorial) and a reference book. A troubleshooting section, a 33-page glossary (!) and a comprehensively cross-referenced index rounds off what is one of the best manuals I've ever seen. I cannot fault it.

And I've got to squeeze in the fact that future versions will include, among other things, PostScript support and a Page Preview facility.

Digita is already talking about version two (which is at least a year away, maybe longer, so don't hold your breath) but I can guarantee there will be at least one version one upgrade, so remember to send in your registration card.

Digita has tagged *Wordworth* 'a writer's dream'. That's just hype, as you well recognise, but I'll tell you what ... summing up *Wordworth* in a sentence, I would have to say this: *Wordworth* is what every owner of *KindWords* would wish they had; it is basically the *KindWords* version 3 *they* dream about. AS

Shopping List

***Wordworth* 1.0**.................£129.95

by **Digita International**
Black Horse House,
Exmouth EX8 1JL
☎ 0395 270273

Checkout
Wordworth 1.0

Ease of use 12/15
The acid test for this category is to use the program without reading the manual. *Wordworth* passes admirably – its Human Interface Protocol (HIP) system is intuitive and a pleasure to use. Printing options are a little complicated and, although covered in the manual, it took a phone call to Digita to fully understand what was required to get the best output. Context-sensitive help is available from within the program.

Speed 7/10
Screen update keeps up with a fairly fast typing speed, but scrolling through documents is a little tardy, even using the standard Topaz font and without graphics present. Slows down to a frustrating crawl in 16-colour hi-res mode, but in four-colour med-res the feel is good. Loading and re-scaling/display of colour pictures, especially HAM, is slow.

Output 6/10
Digita's UltraPrint system is a brilliant idea and raises the quality of *Wordworth*'s output to above average. But future versions will need to take full advantage of the many different proportional fonts supplied as standard with modern dot-matrix printers, and be able to mix graphics on the same page as those fonts, before it can be classed as good. PostScript and Compugraphic font support would seem to be the way to go.

Graphics 2/5
Simple positioning and re-scaling options for IFFs. No grid to snap to, no duplication facility, no crop facility. If *Wordworth* is to become a 'great' program, rather than 'better than the competition', more thought needs to be put into the facilities offered for the manipulation of graphics within documents.

Text editing..............9/10
Get rid of the toolbox and rulers, stick it in two-colour mode, and *Wordworth* feels extremely comfortable when bashing out words. When all the hotkey short-cuts are fully mastered you can really get up a good head of steam.

Text formatting 8/10
Contour-flowing around graphics is superb, although a vertical standoff distance needs to be implemented in future versions. Indents and outdents are quickly and easily obtained and the ability to create separate formats for each paragraph means that only the one ruler is needed per document. Changes are easily made, making mucking about with the format of a document a fun thing to do.

Tools/Utilities 7/10
The spelling checker and thesaurus are nothing out of the ordinary, but perfectly adequate. The glossary feature is useful, but it would be nice to able to put at least some of the phrases on to hotkeys. Mail merge is flexible and simple to use. Timed auto-save automatically overwrites a previously saved file of the same name, which could mean losing data that you didn't want to lose; this needs to be changed.

Documentation.......10/10
If only all software developers put this much thought into their manuals. Digita deserves very high praise indeed for taking the time to get it right.

Price Value.............18/20
Same RRP as *ProWrite* and *PenPal*, but *Wordworth* is a class above both of these in performance and features. It can do more than *Protext*, which is £20 more, and it's almost as fast. Pounds-per-feature, no other Amiga word processor comes close.

AMIGA SHOPPER 79/100

Unless a greatly enhanced *KindWords* comes along, which is rather doubtful, I predict that *Wordworth* will become *the* word processor for the Amiga.



"The Amiga is especially good at colour graphics. Let me guide you through the maze of products to the ones you need, and help you avoid expensive mistakes."

Phil South

Back to reality

We've a Special Real Issue this month, as our Graphics Ed Phil South delves into the realms of Real 3D and Real Things. Is this virtual reality on a plate?

REAL 3D

Version 1.3 of *Real 3D* should be out by the time you read this, and although you may think of it as being an old product, this is in fact a totally revised and more powerful version altogether. (And no Red Rock jokes, please.)

Real 3D is simple to use, employing the usual three-window environment to cover top, front and side views of your objects. The tools you need are laid out in the fourth window, as are descriptions of the objects you create and their primitives. Objects are selected by clicking on their names, and once selected can have modifications such as extrusion and even rotations performed on them with the mouse.

Objects are created using the basic 3D shape primitives – flat rectangles, triangles, spheres, cones, cylinders and so on – and creating more complex shapes is merely a process of bolting these basic shapes together or deforming them in some way. This is much easier to do than in most packages of this kind, as you can zoom in and out on the shapes to get the blending just right.

Material things

Once you've created the shape of the object, you can attach a 'material' to it. A material is a combination of colour and texture (or, in this new version, a bump map too). For example the teapot in one of the most impressive demo pictures is a shiny gold colour, and the surface texture is an irregular bump map which simulates beaten metal. The way the surface reflects light is alterable via the Modify Material menu item, which enables you to set the brightness, transparency and 'specularity' of an object. The specularity gives you the 'hardness' of the object, and the brightness tells you how brightly it reflects. Hardness gives you either a sharp or fuzzy outline to the bright highlights you get on an object, and this is linked to the reflectivity of the object.

Your textures and bump maps are created from standard IFF files, as you would save out from *DeluxePaint* or a similar program, and materials are easy to create from your own files.

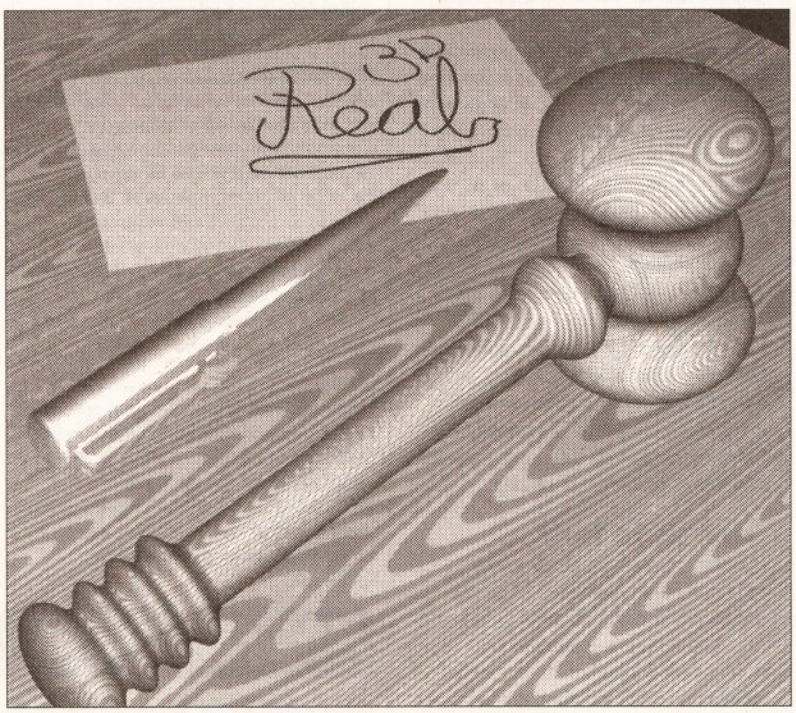
Once you've created the objects and put them together in the positions and rotations you want, you have a very slick way of setting your viewpoint with the wireframe section of the program. Simply rotate and zoom in and out using the sliders, and click on the REC button to set that position. Returning to the Editor, you will find that an observer and aim point have been set for you.

Once you've positioned your lights for the right effect, you move on to the solid modelling part of the program. The modeller has a series of buttons that you push to create the full render of the frame you've created. But before you push the big button to commit yourself, you can choose to autolight the thing and do a fast render without any textures or lighting effects – giving you a quick pencil test, as it were, of what you've created. If you're happy with that, you can do a conventional trace to check textures and reflections, and finally a full HAM trace – or you can even render directly to a Targa or other 24-bit board.

Making things move

Animations are similarly easy to accomplish in *Real 3D*, as there are loads of automatic systems built in to handle animation. For instance, set points in a path around the objects can be recorded for the camera, and the computer will in-between or 'tween' them. On the other hand, each frame can be set individually using the wire frame editor. Either way, once you set the thing in motion it will render each frame and save it to disk. After setting the animation to render, you can leave the machine to get on with it and go down the pub or to bed – as with all rendering programs, *Real 3D* takes some time. When you get up or roll back from the boozer, you should find the animation on your disk, ready for you to play.

One feature which I've never seen anywhere else is the ability to animate bump maps. All you do is create a series of bump maps with the same name and a number on the end, like "watery1", "watery2"... "watery9" and so on, and the program will read those bump maps and apply them to your objects for each different frame of the animation.



Real 3D makes producing complex rendered images a simple process. And its ease of use means that, unlike some other programs, it's fun to use, too!

JARGON BUSTING

NTSC: The American and Japanese video and TV standard. Stands for National Television Standards Committee, and not "Never Twice the Same Colour" as some wags would have you believe.

PAL: The European TV standard. Stands for Phase Alternating Line.

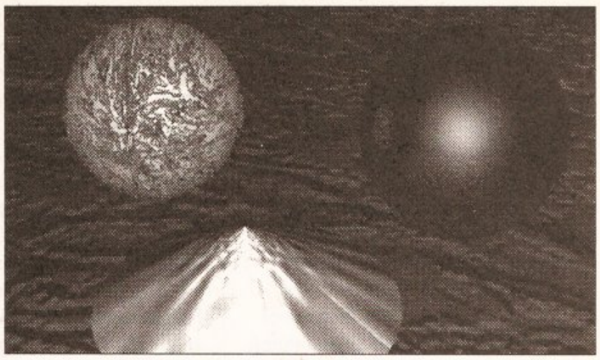
A pro system

The direct support for 24-bit cards (and the Targa too, if you have a PC side to your system) means that *Real 3D* is a real pro system, and the features and ease of use make it stand out above the mass of other, harder to use applications. Gary would disagree I know, being a *Turbo Silver* fan, but I find *Real 3D* easier to handle even than *Imagine* (reviewed by Dr Gaz this issue).

Obviously the speed of redrawing the screen goes down when more and complex objects are being created on the system, but that's when an accelerator card becomes invaluable.

Using *Real 3D* with an accelerator card (see the last issue of *Amiga Shopper* for our accelerators special) is very nice and convenient with normal HAM mode, and darn near essential if you're running 24-bit. Accelerators you should check out are the GVP 3001 (for the very rich), and the HARMS 030 Professional, SSL B5000 and CSA Mega Midget Racer for the poorer folks among us.

continued on page 60



Things like how much an object reflects the light and what texture it should appear to have are all easily set from *Real 3D*'s menus, so images like this are easy to create.

CHECKOUT REAL 3D

Ease of use............15/15
The easiest 3D rendering package I've ever used, with some very nice quick'n'dirty fast rendering routines to try out stuff before you do a full trace.

Speed 9/10
Even with everything turned up full, Real 3D outpaces the slower more conventional packages by a factor of about 3:1.

Output 9/10
Full trace pictures can be output as normal HAM images or as 24-bit Targa or 24-bit IFF images.

Graphics handling....9/10
Accepts IFF images as both texture/colour or bumpmap images, and so is very flexible.

Colour......................9/10
Can assign any colour you like to the shapes you create, and performs exceptional shading on the base colours, especially in 24-bit.

Text editing................4/5
No text editing to speak of, although the program has some fonts for you to render up to add text effects to you pictures. You can also import text as IFF files.

Tools 8/10
Tools are available as menu selections or as buttons on the screen, giving you two ways of working depending on your preference.

Documentation.........9/10
Nice thick manual which covers all aspects of the program, although it is so easy to guess what everything does you rarely have to resort to reading it.

Price Value............15/20
Has all the features of a professional package for a professional price.

AMIGA SHOPPER 87/100

Real 3D is one of the most enjoyable programs I've ever had to review. The bump mapping is the most fun you'll ever have without actually producing anything.

GRAPHICS NEWS

There are some pieces of equipment which cross the boundaries of what is graphics and what is video, as Gary W and I find out every month. One thing which looks like fuelling both of our moist daydreams over the next year is the NewTek Video Toaster. Although a European TV standard (PAL) version is said to be "some way off" as yet, the American TV (NTSC) version Video Toaster from NewTek is still making waves. After the success of the Toaster at the MacWorld Expo (yes, that's MacWorld) where the product was said to be the best seen at the show (ho ho), Newtek has announced that it is to market a stand-alone Video Toaster. (You may like to know that according to NewTek co-founder Paul Montgomery, the device was called a Toaster rather than XYZ3000 or something, because "It's an appliance and everyone should have one.")

The Toaster functions as a framestore, switcher, titler, and digital video effects (DVE) generator, and is available as a card for Amiga 2000/3000 computers for $1,595, or as a stand-alone system for $3,995. The product features a four-input video switcher which can perform cuts, fades and wipes among any of seven sources including four video inputs. It also includes a digital video effects generator, a three-dimensional animation package called *LightWave*, a character generator, a paint program, two frame buffers, a colour processing engine called ChromaFX and a frame grabber and storer.

The Toaster has been getting some extraordinary write-ups in magazines not usually into reviewing computer products. *Rolling Stone, Videography, The Financial Post, The Hollywood Reporter* and *Esquire* have all carried stories on the Toaster in the last two months, not to mention the rave reviews the machine has gleaned from computer magazines and other computer firms. Apple uses them to drive its audiovisual presentations and, as I said before, *MacWorld* magazine is quoted as saying that the Toaster was "our favourite product of the MacWorld Expo," which is high praise indeed from a magazine dedicated to a rival computer. And as I may have told you Todd Rungren, Mac enthusiast and aging hippy songster, has bought 64,000 bucks-worth of Amigas and Toasters to make his videos with.

The new stand-alone Toaster looks uncannily like a Commodore Amiga 2000, and in fact a closer glance tells you that it is precisely that, the difference being that you buy the whole system ready set up for broadcast TV. Later versions of the VT hardware will be housed in a smaller, all black purpose-built box, which is currently being designed and made as we speak. What you get for your $4,000 is an Amiga 2000, 5Mb of RAM, a single 3.5-inch internal floppy drive and a 52Mb SCSI hard disk drive and controller. The two composite and single RGB monitors you need to get going are supplied by the user. Also, the signal you have to feed to the Toaster must be fed through a Time Base Corrector – you can have this supplied with your Toaster for an extra $995! If you want to do animation with the excellent 24-bit rendering software, you need to have some means of laying the frames down one by one.

Although, all things considered, this may not seem like a good deal, bear in mind that although the Toaster is supposed to be TV production for everyone, it is in fact only for everyone who has access to:

- NTSC video equipment
- A Time Base Corrector
- A handful of monitors
- A pair of U-Matic video recorders

This may sound like a big cheat, but remember that it's all relative. As Gary W would tell you at the drop of a hat, video production isn't cheap, and without the Toaster you are talking about 100,000-odd dollars-worth of equipment before you even begin adding the tape recorders, TBCs and so on. Digital video effects are not cheap, and neither are all the other things that the Toaster bundles into one Amiga slot. And so as long as you desk is big enough for a couple of U-Matic machines, TBC, a couple of composite reference monitors and an Amiga, this is true Desktop Video! Compared with the competition, it really is cheap.

Of course, the big rub is that the PAL version is "nowhere near finished": even though **we** know that at under £1,500 the thing would sell in the thousands, NewTek doesn't. Although the machine currently works only on American standard NTSC composite monitors and TV, a PAL version of the machine has been "in the works" for about the last year. When I spoke to NewTek recently, the company said that it is reluctant to name a date for a PAL release. I suspect that work on the PAL version hasn't even begun, until the size of the UK market for the machine can be assessed. NewTek awaits news of what the Brits want from a UK Toaster. The thing of it is that NewTek doesn't know what we want. Even if we want it at all.

So, I guess it's up to us to tell them. Interested parties who want to show the size of the UK Toaster market by jamming NewTek's switchboard, or who just want more information about the thing, can get in touch with the company on 010 1 913 354 1146.

If you can't wait to get your hands on a Toaster, don't fret. Gary Whiteley and I will be doing a special review/preview of the NTSC version of the machine exclusively for *Amiga Shopper* in the very near future. Hold on to your hats.

continued from page 59

REAL THINGS

When the *Real Things* range first came out about a year ago, it was hard to figure out what the purpose of supplying animated versions of birds in flight or animals walking and running was. But gradually is becomes clear, as the range grows, that the concept of clip art can be extended to animation and even 3D to good effect.

Correctly animating an object is hard enough, and if that object is a living, breathing animal then the task in hand becomes several orders of magnitude more difficult. So having an expert artist or animator to create an animation for you to base your work around is rather a good one, if you look at the idea like that.

There is a lot of scope for the idea of amplifying human potential. Robin Billson of RGB Studios is landscape painter, and he agrees with this idea. He started by drawing some horses from a book he had when he was a child. The idea was to add something to *DPaint III*, as on its own it is a little "content free". The idea was to give people a bit of content, so that they can grow from there with ideas of their own.

The *Real Things* series covers horses, birds, and now humans – life studies in various stages of movement. The files are stored on the disks as animated brushes for use in any graphics program which supports them. Although the animal work is highly original, I think that the human animations are drawn from the work of the early British motion photographer Eadweard Muybridge. (You may have seen films made from his prints in documentaries about early filmmaking.) There is nothing wrong with that, as the sequences are excellent – nothing like it has been done since, and besides all that I imagine that Muybridge's copyright has long since expired, since he made the film in 1904.

The *Real Things* range covers a lot of ground from education, fun and study, right through to the creation of graphics for multimedia and video. Something for everyone, in fact, and finally here we have the real point of it all: *Real Things* are a creative experience that everyone can enjoy. Real living things that can move on your screen, and that you can paint into your own animations. To use an analogy, it's like those "play along" records – they get you started in a simple and easy way, yet the result is better than the sum of the parts you put into it. You always get something more out of it. Sounds crazy, but it's true. There will be a new Real Things product out for the autumn, and I for one am looking forward to it.

Oh, and incidentally, don't forget the super *Real Things* animation demonstration which you receive as part of the free demos disk which comes with your subscription to *Amiga Shopper*. The disk features a special tutorial on how to create a butterfly, which takes you through the process of creating animations in a step-by-step way. AS

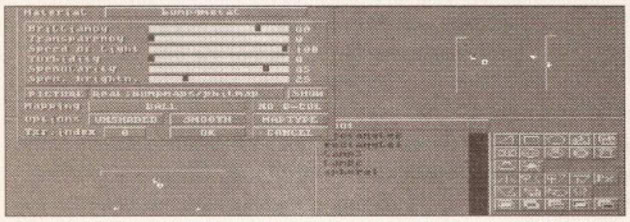
REALLY SMART TIPS FOR REAL 3D

There are lots of hints and tips which can be given for *Real 3D*, besides the usual 'get more memory and a fast chip' routine. Creating your own bump maps and textures, for example, is a very subtle business, as is lighting. But the beauty of the program is that it really is not that difficult to do.

Creating your own bump maps is a piece of cake. Simply create a brush using *DPaint*, and save it to disk. The beauty of the system is that you can create disks of materials which are your very own – materials which you can use for your own objects, but which any other person can't. How's that for exclusive?

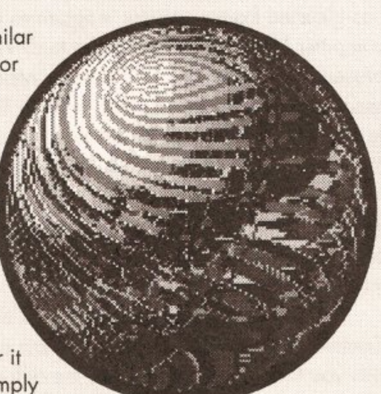
The bump map on the right is called Philmap. It is an IFF brush, in a shade of red as it happens (although you won't be able to see that). The brush was made by writing my name using the magnify mode and grabbing it as a brush. The brush was then stamped all over the screen, and a rectangle was saved out as a brush, in the same way that you create a texture for *DPaint*. Save the brush to the 'Bumpmaps' directory on the disk and you're ready to go.

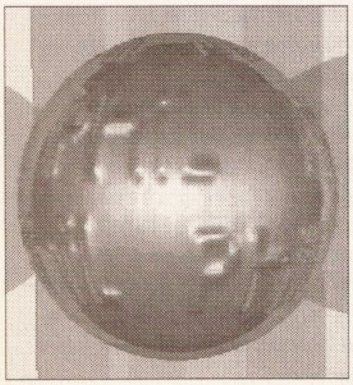




Next, you choose the Modify Material menu item and select your new bump map from the requester. Once the material has been modified, click on your shape and select Hierarchy/material. Then choose your new material. The shortcut key stroke is the letter b, which pops up the requester just as if you'd selected it from the menu.

And there you have it, a wooden ball (right). The colour is selected using a similar process to altering the material, by selecting Hierarchy/colour from the menu, or by typing a letter f from the keyboard. The texture of the ball is selected by modifying the material in the material/modify requester.





To show what a difference a colour and a bump map can make, here's the same ball from pretty much the same angle, but with a different material and a wooden backdrop to reflect light at the ball (left). Note that if you show a mirrored or glass surface, you have to add something for it to reflect or you get a blank screen! Simply select hierarchy/material, choose a new colour (one of the defaults or one you've created) and the object is altered. When you render it, the colour and texture are changed, but everything else like lighting and position remains the same. The bump map is the Philmap brush I created first, and the colour and reflectivity have been changed.

SHOPPING LIST

Real 3D version 1.3
Beginners' version..........£120.85 (+VAT)
Pro and Turbo versions....£348.19 (+VAT)

Available from **Alternative Image**
6 Lothair Road
Aylstone
Leicester
LE2 7BQ
☎ 0533 440041

Real Things
Humans.......................................£29.95
Birds 1 and 2..............................£29.95
Horses..£24.95

Available from **RGB Studios**
Gables
Buxted
East Sussex
TN22 4PP
☎ 0825 812666
or 0825 813592

CHECKOUT
REAL THINGS

Ease of use............20/25
The files are simplicity itself to employ. Just paste them into your animations as anim brushes.

Colour.....................8/10
Good use of colour, and appropriate to the subject matter. Particularly impressive was the skin tone colour, which is one of the best I've seen.

Documentation.........5/10
Very little in the way of docs is required to use the files, and so the documentation is limited in scope, although lots of hints and tips are supplied with each pack.

Artistic value..........30/30
Very cleverly done, and adds a real spark of realism to your animations – or even games, if that's your leaning.

Price value............23/25
Good value for money here, as the files add a lot to your graphics. They are a sort of four-dimensional clip art!

AMIGA SHOPPER 86/100

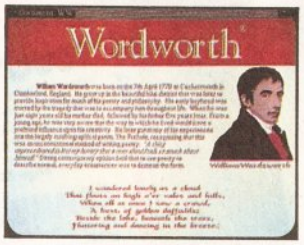
A fine body of work, and growing every day as RGB Studios pumps out still more animated real things for you to enjoy. An excellent idea, well executed.

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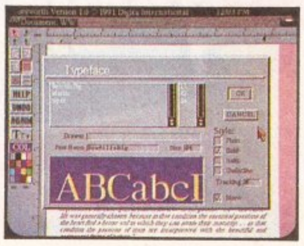
Commands are grouped under a series of pull-down menus, accessible either by the mouse or keyboard. Frequently used commands have on-screen icons, including Help, should you need it.



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Graphics have always been the Amiga's strong point. Now it's better than ever. Pictures from Deluxe Paint can be placed in a document, and then sized, scaled and dragged (text automatically reformats around the image).

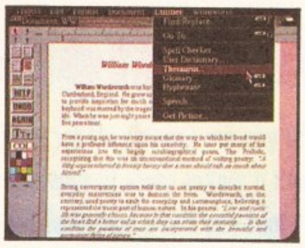


Wordworth's enhanced fonts will give you the very best printed quality. You can also print special symbols, such as boxes, arrows and so on. Better still, you can mix graphics, Wordworth's enhanced fonts, Amiga fonts, Colorfonts and your printer's own fonts, all on the same page.

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As Amiga Computing put it, "the only Amiga word processor to rival Protext for speed. I would recommend the program to anyone thinking of buying their first word processor or upgrading from Kindwords."

Wordworth is written in the UK by Digita. Which means you'll be using an English Collins spelling checker and thesaurus, and you'll know where to come for professional support.

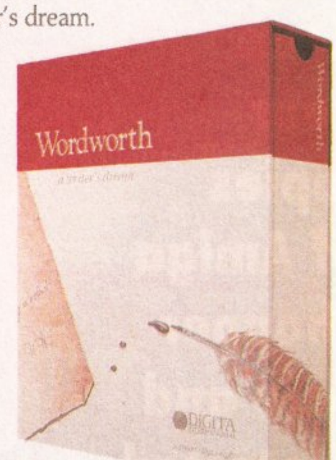


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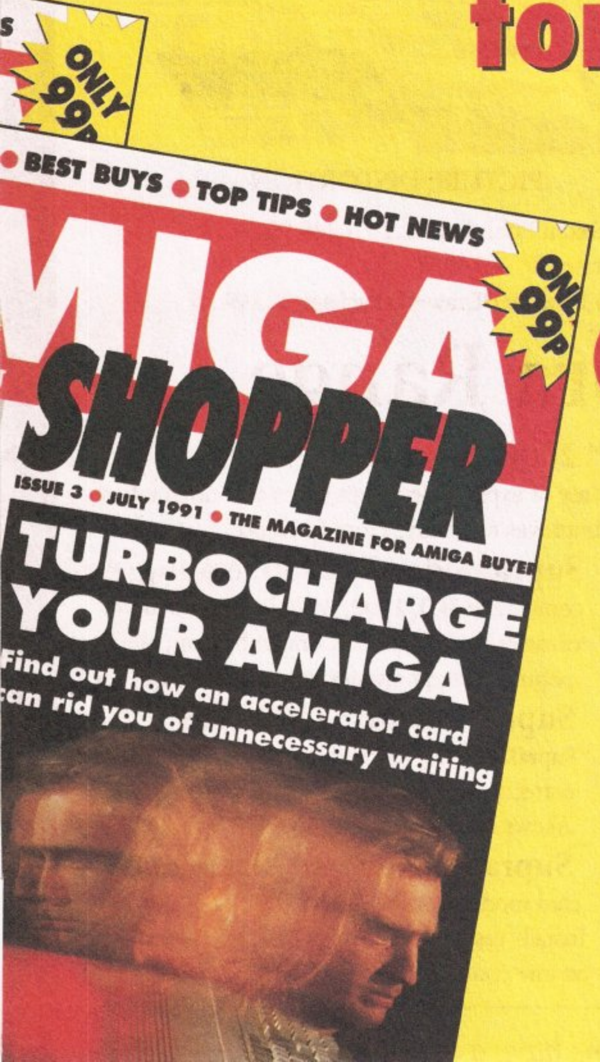
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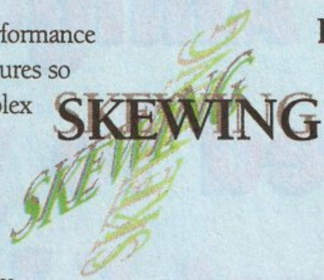
WORDWORTH This brand new word processor from Digita International is described by them as 'a writer's dream' and you'll be able to see if it is for yourself with this demo. You will also get a voucher enabling you to buy *Wordworth* for just £99.95 – that's a saving of £30 on its normal price!

SEQUENCER ONE In issue 2 of *Amiga Shopper* we said of this new sequencing program from Gajits Music Software "it has to be *the* budget priced sequencing software for the Amiga." Why not find out for yourself and take advantage of our special voucher offer to obtain a free disk of exciting new samples for use with *Sequencer One*?

3D CONSTRUCTION KIT If you've ever wanted to create your own 3-dimensional worlds then now is your chance with Domark/Incentive's brand new game creation program. It allows you to use Incentive's famous Freescape programming system to create your own stunning 3D games – without a scrap of programming knowledge. Don't be fooled though, this is a utility that will great programming power at your fingertips.

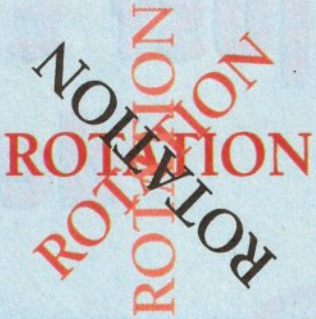
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Just Imagine

Gary Whiteley shouts "action" with Impulse's latest 3D animation package, Imagine

Packed with functions, *Imagine* is the new 3D modelling and animation package from Impulse – a company which some of you will remember as the creators of *Silver* and its subsequent offspring, the *Turbo Silver* series. I was an enthusiastic explorer of *Silver*. It seemed to offer the potential to do things that other 3D packages just weren't capable of at the time. It was hard going, but things slowly improved through *Turbo Silver* up to *Turbo Silver 3SV* (which was really pretty hot – at least in terms of innovations).

However, the learning curve of the *Silver* series was steep, and the modellers were difficult to use. I often found that I'd use *Sculpt 3D* to actually build the objects, convert them using *Interchange*, and then load them into *Turbo Silver* and set up my scenes from there. Why? Well, I liked the things you could do with *Turbo Silver* – such as texturing and wrapping brushes on to objects. And it had flexibility in setting the characteristics of objects in a scene.– for instance, you could make green glass and actually have it behave like green glass! But let me tell you, there were times when I just could not figure some things out. These Impulse people sure had some quirky ways of doing things: like, when everyone else has the Y axis of the world running vertically and the Z axis running into the 'distance', good ol' Impulse had to have Z where Y should be, and vice versa. And it still does! But at least the products were continuously improved, upgraded and debugged. And their newsletter was fun too.

Leader of the pack

Well, now Impulse is back. *Imagine* is far in advance of any of the *Silver* programs, and in competition with similar products such as *Sculpt Animate 4D* and *Real 3D* (Turbo Pro Version). It is definitely up there with the leaders.

Many of *Imagine*'s features are actually improved versions of those seen in *TS3*. But there are now several more modules to select and use. Where *TS3* only had a modeller and a renderer, *Imagine* has a Cycle Editor, a Forms Editor and a Stage Editor, as well as the Detail Editor (similar to *TS3*'s modeller) and the Project Editor (from where all rendering takes place). There is also another editor inside the Stage Editor: the Action Editor, where your 3D thespians can be choreographed and lit and the camera crew given their instructions.

Many refinements have also been made to the program. *Imagine* has built-in effects such as Ripple and Explode, it features Boolean operations, will take an IFF picture and turn it into an object, can have up to 32,000 lights simultaneously on screen (though I think this is going to be purely academic to most people!), is able to generate 24-bit images and can produce ordinary ANIM movies, as well as Impulse's proprietary RGBN format files. And that's just scratching the surface!

There's no way that I can possibly describe all the features of *Imagine* in this limited space. What I will do instead is take you through the various modules, mentioning their functions and features as I go.

Getting started

The whole *Imagine* package comes on just one disk, which contains two versions of the program – the FP for those with fast processors (eg 68020/30 boards) and another for those without. There are also two drawers, containing *Imagine*'s Textures and the Effects.

I opted for the FP version, being the proud owner of a new 68030 board, but the non-turbo version works identically – if at a rather more leisurely pace.

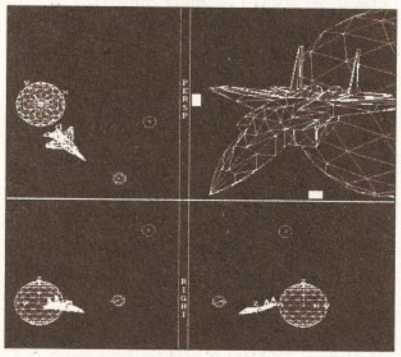
As there are no demo files to load, you have to start from scratch, selecting 'Start a new project'. Next, you are presented with the Project Menu, where you set up a 'SubProject' or two, in order to render your creations. Different SubProjects allow you to easily render files in your preferred resolution, size and format – enabling you to get good approximations of what your final work will look like before committing your Amiga to the inevitably slow crunching associated with 3D (and especially ray-traced) work.

> "Videos don't make themselves – they need actors, technicians and equipment. With a 3D animation package, you create the actors and use the program's built-in equipment. So, you're the technician, and all you have to do is imagine... But don't worry if this all sounds daunting – I'm here to direct."
> Gary Whiteley

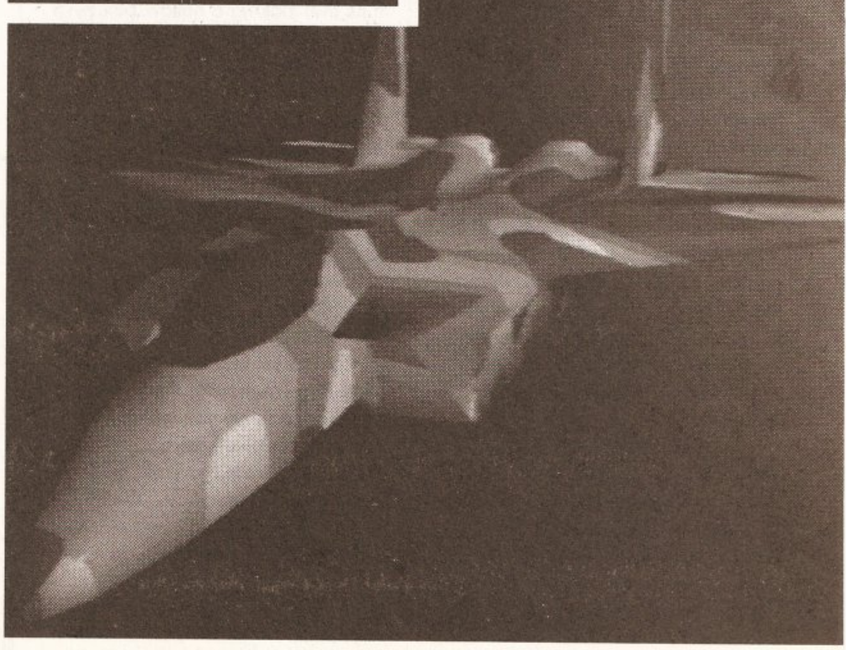


Incidentally, the choice of rendering formats is really pretty comprehensive. You can choose from 24 bit (Impulse's own RGB8 format or the more transportable ILBM-24), 12-bit (RGBN format or ILBM HAM) or separated RGB files. You can also determine whether you want to use interlace or hires (in which case you'll only get 16 colours), whether to use ANIM or *Imagine*'s own animation format, and a choice of black and white or colour (wire-frame or shaded), scanline or full ray-trace rendering. In addition to this, you can also determine the size of the picture in pixels (up to 8,000 x 8,000) and its aspect ratio. However, pictures larger than the normal Amiga resolutions must be output to specialist equipment such as a film recorder. Firecracker 24, Impulse's 24 bit board, is also directly supported.

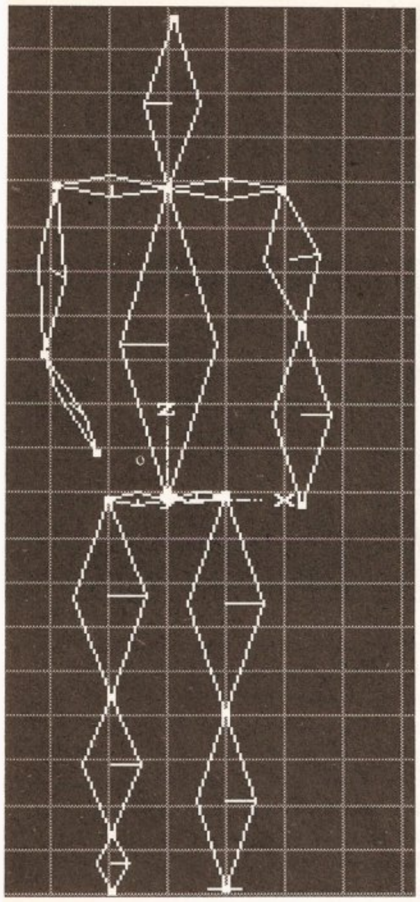
continued on page 66



Here we have both a Quad view...



...and an interlaced HAM rendering of an F14 flying away from the Earth.



Front view of a skeletal figure used as a template for a cycle object.

continued from page 65

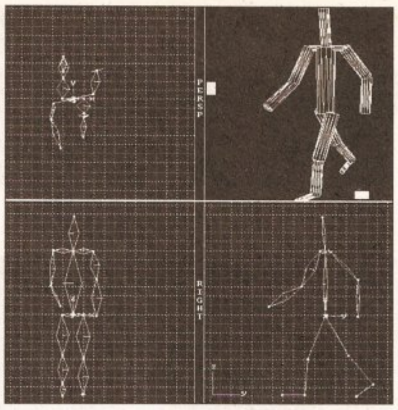
If you change your mind about the format at any stage, your Subproject parameters can be modified at will when in the Project Editor module.

Playing at God

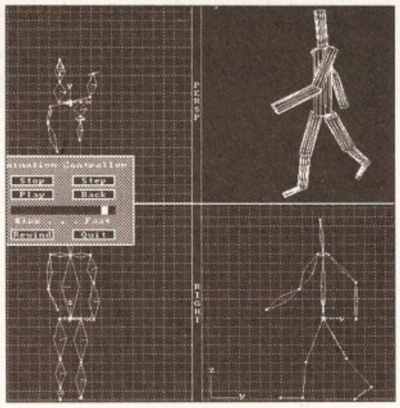
Since the object of the exercise is to make some kind of 3D world, and render it for others to marvel at, we have to do some construction at some point. One way in which *Imagine* allows the user to do this is with the Detail Editor, in which objects can be built up from simple 'primitives' such as spheres, planes, tubes or cones. However, this is far too restrictive for complicated items, so *Imagine* also allows objects to be built from points and faces, or by manipulating primitives or other objects which have been built.

Of course, you could always import objects from other 3D packages (if you can convert them to the right format), and previous users of *Turbo Silver 3* will be happy to hear that their old objects can be recycled by loading them directly into *Imagine*.

The Detail Editor has a 'Quad View' (Top, Front, Right and Perspective views), with optional grid for accurate drawing. Each window can be brought to full screen size and quickly changed to another view. In the Perspective window, objects can be represented as wire frame, solid (which is wire frame with all hidden



The Quad view shows the same information, but in four views...



...and this grab shows the Quad view with the animation controller

lines removed) or as a greyscale coloured image (termed 'shaded').

Of course, constructing objects isn't as easy as it sounds – things never are. To build an object other than a primitive, the sequence goes something like this: first, add an axis (all objects have their own axis), then add some lines. Then join up the surface in triangular faces. And then? Well, this is where you really have to start to think, as there is often more than one way to produce your chosen object. For instance, you may think that making a hollow box (with sides which actually have a thickness) is easy. And it can be – if you follow the right sequence. And this is the point with *Imagine:* it requires imagination. A hollow box can be made in several ways; how about making all the sides separately and then glueing them all together? Or how about extruding a cross-section and then adding the base? Or what about Boolean operations? With *Imagine*, you could put one box inside another and then click on Slice. Then, removing the unwanted parts would leave you with the required, hollowed-out box. Slice could also be used to 'drill' holes in wood or put faces on flat objects.

For easy building of objects such as bottles or glasses which, in the real world, could have been produced on a lathe, the Sweep command can be used to rotate a cross-section of an object around an axis. Objects can also be Extruded, Spun, Replicated (that is, multiplied on to themselves) or Conformed to either sphere or cylinder – for example, an object which takes the form of a world map can be accurately given a spherical form.

Imagine also has a 'magnetism' feature, which allows selected points to be pushed and pulled according to predetermined forces and directions. This feature has many uses, including making a flat plane into a landscape, distorting objects into smooth curves and so on.

Choosing individual points or groups of points is simple. By selecting either Click (for single points), Lasso (for drawing a 'rubber-band' line around the points you wish to select) or Drag Box (where your points are selected by dragging a box out around them), you can grab the points of your choice and then move them around to your heart's desire.

Objects and their axes can be scaled, rotated and sized at any time. Several objects may be grouped together so that they stick to one common axis, or they may be permanently joined. Complex objects may also be split apart into simpler ones. Objects may be cut, pasted, copied or deleted at will.

Attributing Attributes

Once an object has been created, its Attributes can be set. These include colour, hardness, shininess, reflectivity, filter (to determine how much light of a selected colour can pass through the object), Index of Refraction (to simulate the light bending properties of water, glass, and so on), and whether the object acts as a light source. Up to four textures (ten are currently available, including checks, grid, camouflage and wood) and up to four IFF brushes (made in *Deluxe Paint III*, for example) can be simultaneously mapped on to any object. You could, for instance, have a map of the world mapped on to a sphere, and then also texture the resulting globe with grid lines. And certain types of brushes affect the object in different ways: a greyscale brush can be used to add simulated 'bumpiness' to a surface (known as Altitude Mapping), while stained glass effects can be achieved by wrapping a brush as a Filter Map, which causes light to be selectively filtered through the object. Reflection Mapping is also possible, where the different colours of the brush reflect their corresponding light. And if you want to be really clever, you can have *Imagine* sequentially map your four chosen brushes on to an object in successive frames. So now you can actually play pictures on your model TV set! But I must warn you – wrapping brushes is not always as easy as it ought to be. In fact, it sometimes seems almost impossible to do even the simplest things with *Imagine*.

All the world's

Leaving the Detail Editor for now, we progress on to the Stage Editor, where we assemble our players.

As you will see from the illustrations, all the editing screens in *Imagine* (except those for Project and Action) are based upon the Quad view, and many features – such as Scale, Rotate, Move and Pick points – are common to each, making the program much easier to learn.

The Stage Editor is where we bring our objects, lights and camera together in order that we can play God and tell them all what to do in the world that we have created. There are two parts to this editor: the Quad View, where we see our objects, lights and so on represented graphically, and the Action Editor, where our Actors (as *Imagine* calls our objects, lights and so on) can be choreographed in a more direct visual and numerical script format.

The Quad view is fine for quick manipulations and basic positioning of objects and you can do most of the things in the Quad view that you

continued on page 69

JARGON BUSTING

24 BIT: An image made up of 24 bit plane. Because each bit plane has two colours, the resulting image is composed of 2 raised to the power 24 – that is, 16,777,216 – different colours.

ANIM: A method of storing animation frames developed by Spartafilm, whereby only the changes between successive frames are stored, thus saving significant amounts of space.

BOOLEAN OPERATORS: Ask your dad (even if you are one). Or look it up in a dictionary like I did. In this context it applies to using one 3D object to cut holes in another; the actual appearance of the cuts are defined in terms of mathematical expressions.

HAM: Hold and Modify is an Amiga graphic mode which allows all 4,096 colours to be displayed at once, with certain restrictions.

IFF: Interchange File Format is a means by which data from different graphics or sound sampling programs is saved in a compatible way.

MAPPING: The method by which pictures or textures are 'draped' over the surface of 3D objects.

PRIMITIVES: A set of pre-constructed objects, such as cones, tubes and spheres which can, by manipulation, be used to make more complex objects.

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can do in the Action Editor. You could load objects created in the Detail Editor, manipulate them (using interactive functions like Scale, Move and Rotate) until they are as you wish, add lighting, and position and orientate the camera until you are happy with your scene. But so far we only have one frame prepared for rendering. What if we actually want to do more than this and make some moving pictures?

You've guessed it! Off we go to the Action Editor. This is where the business of creating the animation really starts moving. The Action Editor is used to define the number of frames in an animation, at what stage of this animation an Actor appears (or disappears), where the camera is pointing at a given time (it could be static, could follow a prepared path or could track a chosen Actor), and what kind of lighting we want (there are several varieties – spherical, conical or cylindrical – which each have their own characteristics such as colour and size).

As you probably realise by now, *Imagine* is a comprehensively featured package. But keep reading; there's a lot more to come.

Global settings allow the user to determine the ambient light qualities (that is, the 'general' background lighting), the sky and ground colours, and also to automatically add random starfields (should they be required!).

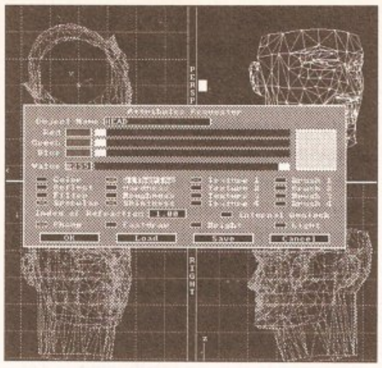
Bear in mind that each frame of an animation can have different globals, lighting, camera positions and objects, and that lights, objects and globals can all be transitioned across several frames, and you'll understand why this program is called *Imagine*...

Effective Explosions

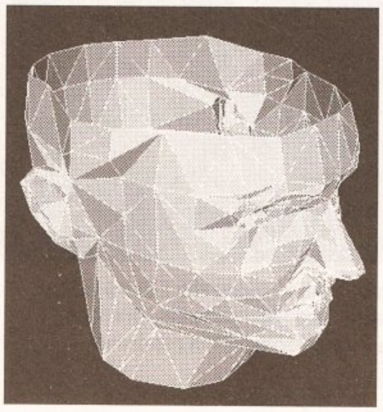
It is in the Action Editor that we find what is perhaps the most innovative feature of *Imagine* – the Effects (or F/X as they are called in the Action Editor). There are currently four effects supplied: Ripple, Grow, Rotate and Explode. No prizes for guessing what these little babies do, and they certainly do it well. For instance, the exploding head (see illustrations below) was done quite simply by telling the Head actor that it would explode into its component parts (with each keeping their individual surface characteristics) over a user-determined period of frames. To give more flexibility, each effect has a series of options which allow you to tailor that effect to your needs.

For example, the Ripple effect can have the size and number of ripples set by the user, who can also decide whether they are radial (like those produced by dropping a stone in a pool) or linear (like ocean waves) and how far they travel. And these effects will work on many objects. I tried rippling a sphere and an F14 plane, as well as more normal models. A rippled F14 certainly looks odd! Explode can also be run backwards, so that you could 'build' an object from its parts. Grow and Rotate are self-explanatory (and Grow can also be used to Shrink). The inclusion of these effects is very welcome, as they bring previously yearned for (and almost impossible to create) effects within the reach of the Amiga user.

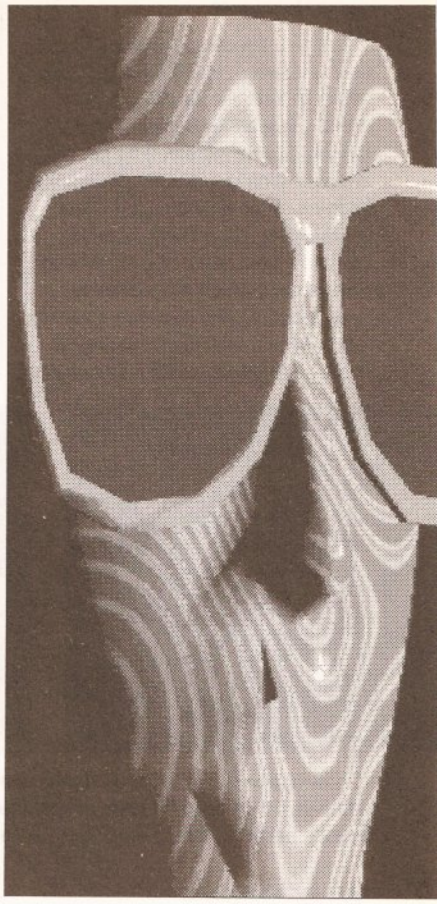
Once you've set the stage, you save the changes and then, if you're sensible, you do a wire frame preview in order to check that the action is how you want it to be. This is easy to do: select Make from the Animate menu, set up the range of frames which you wish to preview and the stepping between frames (so that you can get an idea of the motion without having to make a preview of every frame). Press [Return], and then wait a while – but keep your eyes on the screen, as each frame for previewing is shown in all windows of the Quad view, which means that you can easily pinpoint any mistakes. When completed, you can play the preview animation back, adjusting its speed or direction, or stepping through frame by frame for fine troubleshooting. Not happy yet? Make your adjustments, preview again and finally save the changes and exit to the Project Editor.



This is the Quad view with the Attributes requester shown, which is used to set the surface characteristics of a selected object.



A full screen, Perspective view, with the shading function active.



This is the rendered image of the head, shown in the Detail Editor.

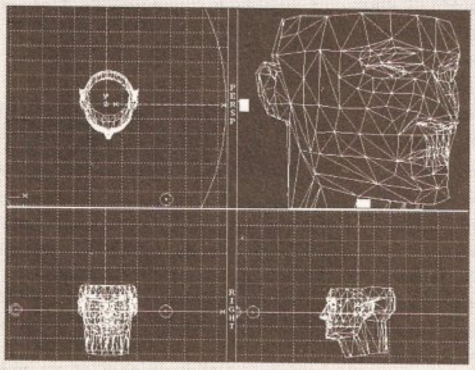
It's render time

OK, it's crunch time (literally). The Project Editor is where the final rendering of the scene takes place. But don't forget that we've only seen a preview of the action so far. We don't know whether the lighting levels or texture and brush maps are correct. So, to save time spent on rendering what may be unwelcome problems, it's best to render the sequence in a small version – perhaps 100 by 100 pixels in size, with Lace (Interlace) turned off.

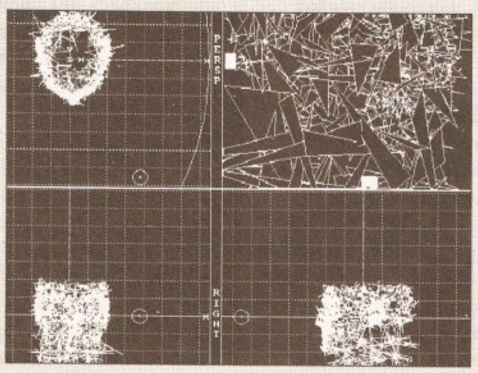
Next, select the range of frames you wish to render and hit Make. If you are using the fast processor version, stick around. If not, go and have a cup of tea and then come back. If all is correct, all you have to do is render the finished product.

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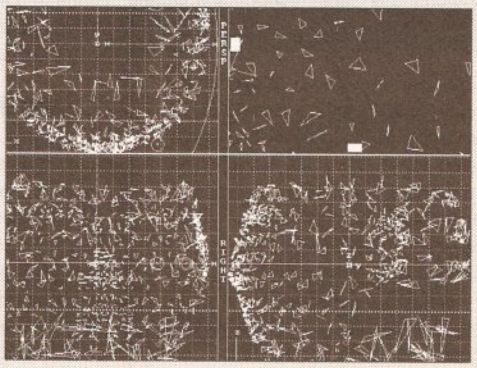
The Incredible Exploding Head



The perspective view shows a wire frame representation of what the camera sees. The camera and light positions are also shown.



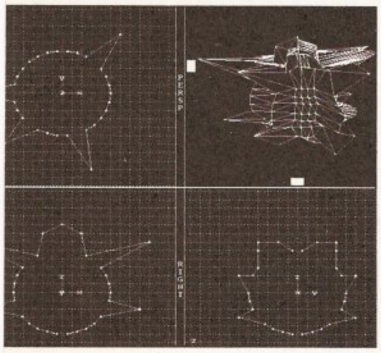
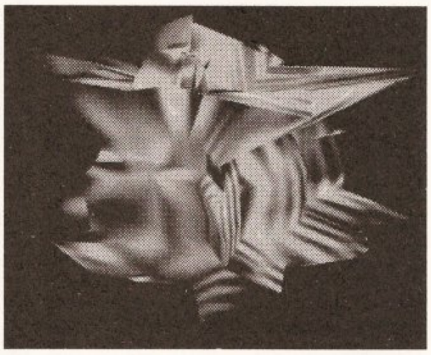
Here the head is exploding – a simple task to animate, because of the program's impressive built-in effects.



Blown to bits. Now you too can make *Death Wish XXVI* – and all without having to get the gore off your carpets!

continued from page 69

Whether it's a colour preview or a final rendering, you'll have to judge where to save the resulting files – which, depending on your output format, can be extremely large. As the animation is made by generating each frame as a picture, and then compressing the pictures together, you are given the choice of deleting any pictures which have already been incorporated into the animation – an option which obviously saves space. Whatever, you'll find that you soon build up a large collection of disks filled with your 3D products.

Creating abstract, 3-dimensional shapes is easy using the Forms Editor. Although this doesn't look much like anything recognisable, practice makes perfect. Above right is how the image looks when rendered.

Skeletor strikes back

If you're still with me, you'll probably remember from earlier in the article that there are two further modules to *Imagine*: Cycle and Forms. As we've already been able to make an animation, what are they for? An examination of the Tutorials section of the manual puts you straight about the Cycle Editor: "Cycle objects are really groups of objects joined in an interactively created hierarchy." If you are familiar with *Deluxe Paint III*, I suppose a Cycle object could be likened to a 3-dimensional AnimBrush. The idea is to produce a kind of 'hinged object' (where all the parts are hierarchically linked in a skeletal form – the head bone's connected to the neck bone and so on) on to which solid objects produced in the Detail or Forms Editors can be hung.

As the skeletal form is hierarchically linked, this means that you can, for example, move a shoulder and the rest of the arm moves with it.

Using tools to Pivot, Twist and Move the individual parts of an object, a series of key frames can be set up which, when animated, will (with any luck) produce a smoothly animated 'walk'. As with the Stage Editor, a preview can be made to allow any creases to be ironed out. The resulting object can be saved like any other, to be loaded as an actor, choreographed and committed to posterity in an animation.

The Cycle Editor is a handy tool which can produce interesting results fairly quickly, but I find it a little awkward to use, as positioning is not reliably accurate (there is no snapping to grid, for instance). However, I've had a hankering for some time to build a 3D Merry-Go-Round. Now it might just be possible.

And finally, ta da, the Forms Editor. The idea of this one seems to be to use the supplied spherical shape to produce 'organic' forms. So far, I've managed to make some wicked-looking shapes, but more normal things are still eluding me. I think more practice is called for...

As usual, work in the Forms Editor is done in a Quad view, but this time your task is to distort points of the sphere over three dimensions in order to create the shape of your dreams. Manipulation is done by dragging points around, and symmetrical movements can be defined by various settings.

Resulting objects can be loaded into the Detail Editor for colouring and so on, but this is a one-way process: sadly, externally created objects cannot be loaded into the Forms Editor.

A problem or two

I'm sorry to say that there are a number of problems with *Imagine* – not least the two part manual. The first part deals with all the features of the program, giving brief descriptions of all its functions. This is not too bad, but there are glaring omissions – such as how to set the various parameters required when texture mapping. A ReadMe file is provided on the disk, giving information about new additions and bug fixes – which is useful – but still does not make up for the lack of detail, although to be fair *Imagine* works in many mysterious ways and to describe them all would probably decimate the planet's already-dwindling forests.

The second part of the manual is worse than the first. This is the Tutorials section, which I would have thought would be rather important to new users. I worked my way through all the tutorials (twice!), and if I hadn't known how to use *Turbo Silver 3* I would have had even bigger problems than I did. Not to say that *TS3* is actually that similar to *Imagine*, but rather that it requires the user to have large amounts of patience and doggedness. Several of the tutorials were lacking in both visual and textual clarity, with some of the illustrations being very difficult to understand. This was especially true of the final tutorial, though imagination and graft got me there in the end. Not the nicest of introductions, though, and several people have remarked to me that they found the tutorials to be a hindrance rather than a help.

Other areas I've experienced problems with are Boolean operations using Slice – some objects work fine, others just will not slice at all. This can be a real pain: for example, I brought in an IFF map of the world, converted it to an object and then wanted to put faces on the land masses before I conformed the whole lot to a spherical shape. No way could I get it to work.

I've also had problems doing something as simple as mapping a check texture on to a simple rectangle. Although I had had no problems doing this days earlier, over an hour of trying produced no joy this time. Other textures worked without problems. It seems that certain parts of *Imagine* are overly complicated and underexplained, or maybe I was just unlucky.

Two further niggles involve the rendering of images. *Turbo Silver 3* had a facility for drawing a box around the area of an image you wished to render, allowing you to quickly check just small areas of your image. This would be nice to have in *Imagine* – rather than having to render the whole image (albeit at the size of your choice). It would mean that small areas could be previewed in full trace mode, for instance.

Finally, Impulse guys, how about centering rendered images, instead of always keeping their top left corner at the top left of the screen? Just a little thing, but it would not only look better, but also be more useful, as animations could be rendered at a smaller image size and still be used for presentations without us all getting twisted necks looking at the top left of the screen. AS

Many Thanks

Many thanks to Artbeat Computer Graphics Ltd., who generously loaned me a copy of the program for this review.

Shopping List

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by Impulse
6870 Shingle Creek Parkway,
#112 Minneapolis
MN 55403 USA
☎ 0101 305 255 9302

Imagine is available from most UK stockists – see the adverts for details.

Checkout Imagine

Documentation 5/10
The Tutorials section is frustratingly confusing. The Reference section is reasonable. But both lack the in-depth detail which the *Imagine* user will (sooner rather than later) need.

Ease of use...............9/15
More difficult to quantify, since *Imagine* allows you to do things which were previously very difficult to achieve, yet some of the simpler-seeming tasks are much more difficult than they ought to be.

Flexibility 13/15
The program would appear to be very flexible, and with thought could provide some stunning effects and animations. However, it's definitely the case that the more you put in, the better the results

Quality 13/15
Another difficult one. Quality in this case is the final output image – and this depends on what type of format you require. As *Imagine* can output in many different formats, there's something here for everyone. Lighting and object attributes are as important here as the output format itself. But you could literally make a silk purse from a sow's ear, if you so wished.

Features 15/20
Imagine is packed with useful features. The Effects and the interactive tools for scaling, rotation and object placing are absolutely outstanding.

Price 20/25
Compared to *Sculpt Animate 4D* (c£320) and *Real 3D* (Turbo Pro version £409), *Imagine* seems to be something of a bargain.

AMIGA SHOPPER 75/100

While certain aspects of *Imagine* are a struggle to get to grips with, I am certainly hooked. Animation is a difficult process, but *Imagine* can help you make your dreams come true. This will be a package that dedicated Amiga animators will have to seriously consider adding to their armoury. And, in weighing up the pros and cons, I would think that for many, *Imagine*'s current shortcomings would not outweigh its other, excellent features.

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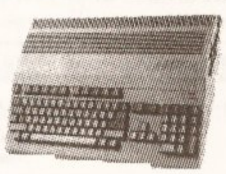
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"This is the second part of Sam Littlewood's C programming series – a series which I believe is the first of its kind to be published in any British Amiga magazine. In it, he builds on last month's initial ideas by adding Amiga-specific things like windows to the program.

The subject of the series, *ADraw*, is a structured drawing tool and will be of great practical use. As technical as it is, Sam and I both feel it will be so good that it will inspire those of you still thinking about C to actually go out and do something about it.

Remember that to follow the series, a working knowledge of the C programming language is assumed – that is, you are expected to understand terms like 'union' and 'linked list' and so on. If you're unfamiliar with such concepts, I've listed a number of books on C in the Shopping List at the end of the article."

Jeff Walker



Writing it right

In part one of his C tutorial Sam Littlewood outlined the ADraw application. The next step is to put theory into practice and add some Amiga-specific widgetry – windows, gadgets and projects

The ability to deal with multiple projects requires some information to be held about each of the loaded projects. Copies of this structure are allocated from AmigaDOS whenever a project is loaded from disk or whenever a new project is created. When *ADraw* starts, it creates one blank project to get the ball rolling.

As mentioned in the last article, all these copies of the project structures are linked together in a list. Listing 1 shows what the Project structure looks like.

The first item, **node**, is the hook by which copies of the structure are linked together; the base for this list is a global variable called Projects. This is initially set up to be an empty list by InitMinList(). Each project has one or more Intuition windows viewing it. Each window has a chunk of memory associated with it, each linked on to the list **windows**.

The actual data contained in the project – the lines, circles, boxes, and so on – all hang from the **elements** list. If one of the top level items in the project is a group of items, then it will have its own MinList structure and the bits of the group will be linked to that.

When *ADraw* becomes useable, a feature that will most certainly be required is that it does not let you lose unsaved work without checking. The element of the structure called **modified** is used to remember if the project has been changed since it was last saved to disk.

Project structures

Having initialised the project list, a new Project structure can be allocated and added to the list. The function that does this, CreateProject(), makes a new untitled project, and can be seen in Listing 2 on page 74.

The Exec function AllocMem() knows nothing about the size of C structures – it must be given the size in bytes. The need to sit down and physically count up the individual bytes of a structure and then leave this number in the source code (thus making alterations difficult) is removed by sizeof. Although this may appear to be a function, it is not – it is an operator built into the C compiler that gets replaced with a magic number appropriate to the size of its argument. That argument can either be a type name – int, char *, struct Project – or it can be an expression, as used above. The code sizeof(*project) gets replaced by the size of the sort of things pointed at by Project. These are struct Projects, the same number would have been given if sizeof(struct Project) had been used in its place.

Project names are also stored in a separate allocated block. Since C strings have a zero (\0) byte at the end, this must be accounted for when allocating the chunk of memory.

If it was guaranteed that the user would never have more than 10 untitled projects around, then the length of new project names would be fixed. Removing this guarantee means that the name is first built up in a temporary area that has more than enough room. Once constructed, the new string is then inspected, the appropriate amount of memory allocated and the temporary data copied to its final resting place – strcpy() has the destination argument on the left, source on the right.

Since the name will have to be freed at some point, the allocated size is kept in the project structure for this future moment.

When a previously set up project is being torn down, the first thing to find out is if the user really meant it. The 'if' statement at the top of KillProject() combines all the checks

continued on page 74

COMPILERS

The application described in these articles, *ADraw*, has been developed using *SAS C* 5.10. The only features particular to this compiler that have ben exploited are the 'proto/...' include files, giving prototypes and fast calls for all the Amiga library functions.

With *Aztec C*, the equivalent information lives in a file called 'functions.h', which can be included in place of the 'proto/...' files.

There are several freely re-distributable compilers around for the Amiga. This application has been compiled with *GCC* – the Amiga port of the *GNU C* compiler. However, there is a drawback to using these compilers, in that the rather necessary Commodore header must be acquired separately. It is available for $20 from CATS (Commodore Amiga Technical Support) – see the shopping list on page 77.

LISTING 1 – PROJECT STRUCTURE

```
struct Project {
  /* Node used to link project onto global list
  */
  struct MinNode node;

  /* Flag, true if project has been changed since last save
  */
  unsigned char modified;

  /* Name of project - a pointer to a block acquired from AllocMem()
  */
  char *name;
  short name_length; /* Length includes '\0' */

  /* List of the windows onto the project
  */
  struct MinList windows;
  short num_windows;

  /* The top level list of elements within the project
  */
  struct MinList elements;
};
```

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for this into one. The && (logical AND) operator always works left to right, and if it finds something that is false it stops evaluating immediately.

When the argument 'force' is true, then !force will be false, and nothing further happens. When the modified flag for the project is false, again nothing happens. Only if the previous two things were true does ConCanRequest() get called. This brings up a box for the user to click Continue or Cancel. If this returns CC_CANCEL, then finally the code associated with the if is executed – a return out of the function leaving the project intact.

Getting rid of a project from memory means that all the windows on to that project are also removed. A pointer is moved to each window in the linked list, removing them in turn. But this introduces a slight problem: moving the pointer involves digging out the next pointer from the current data structure. Removing the window involves freeing up the data structure. The memory containing the next pointer we require at each stage will have been returned to the system by killing the current window. So the data which we have stored will be inconsistent The solution to this problem, shown in Listing 3, is to get the value of the next pointer before the window is removed.

When a 'for' loop checks the condition to continue the loop, it evaluates the middle of its three expressions. This one takes a copy of the next node. As well as just assigning, an = expression has the value that was assigned, so the value of the next pointer is checked for the loop condition. At the end of the loop, the last of the three expressions is evaluated, which simply copies the stored value 'next' into the variable 'node' again.

LISTING 3 – GET NEXT POINTER VALUE

```
struct MinNode *node,*next;

/* Walk 'node' along list when list is not being modified by this process
 */
for(node = list.mlh_Head; node->mln_Succ; node = node->mln_Succ)
        /* Do something with 'node' */

/* Walk 'node' along list when list is being freed as we go
 */
for(node = list.mlh_Head; next = node->mln_Succ; node = next)
        /* Do something with 'node' and free memory */
```

Windows

Having a linked list of projects in memory is fine to an extent, but we want to get at that data. The portholes through which this happens are the Intuition windows.

ADraw can render the current view of a project into the window, and the user can hit gadgets and click with the mouse to change that view or edit the project. An Intuition window is created by giving it a template – the NewWindow structure. Referencing this, Intuition allocates and fills in a new structure, **Window**, as well as creating the on-screen imagery that one associates with a window.

The Intuition Window structure has all the information Intuition needs to maintain the window, and information that lets the program draw into it and get input from the window. Any modifications to the actual window beyond drawing into it are done by calling an Intuition function with the appropriate information. This gives Intuition a chance to keep up to date the display and its internal ideas as to what is happening:

```
/* Move window 10 pixels to
right */
MoveWindow(window_ptr,10,0);
```

ADraw will want to draw into the window, get input and change things like the title. For this sort of work it need go no further than the structures and functions provided by the Intuition and Graphics libraries.

There is, however, a further level of operations for which the base structures are not suitable. The windows have to be linked to projects, and there has to be some information about where in the project the window is looking. All this information, particular to *ADraw*, is kept in a private window structure.

LISTING 2 – THE 'CREATEPROJECT()' FUNCTION

```
/*
 * The global linked list of all projects
 */
struct MinList Projects;
int NumProjects=0;
/* CreateProject
 *
 * Create an untitled empty project and add it to the
 * projects list
 * Returns a pointer to the created project
 */
/* Static variable holding the next number to used for new
 * untitled projects
 */
int UntitledNumber = 1;
struct Project *CreateProject(void)
{
    char name[UNTITLED_MAXLEN];
    struct Project *project;
    /* Generate a temporary copy of the project name, also
    * increment
    * the 'Untitled' number.
    */
    sprintf(name,"Untitled-%d",UntitledNumber++);
    /* Allocate the new project structure
    */
    project = AllocMem(sizeof(*project),MEMF_CLEAR);
    if(project == NULL) AllocError(AE_PROJECT);
    /* Set the name, allocated memeory is length of string+1
    * to allow
    * space for the '\0' at the end of strings
    */
    project->name_length = strlen(name)+1;
    project->name = AllocMem(project->name_length,0);
    if(project->namew == NULL) AllocError(AE_PROJECT);
    strcpy(project->name,name);
    /* Initialise the window list
    */
    InitMinList(&project->windows);
    project->num_windows = 0;
    /* Initialise the element list
    */
    InitMinList(&project->elements);
    /* Add project to global list using Exec function
    * AddHead()
    */
    AddHead((struct List *)&Projects,(struct Node *)project);
    NumProjects++;
    return project;
}
/* KillProject
 *
 * Remove a Project from the system - close any windows that
 * are viewing
 * it and remove all its data
 *
 * takes a flag to say if user should not be queried if
 * project is modified
 */
void KillProject(struct Project *project,int force)
{
    struct MinNode *node,*next;

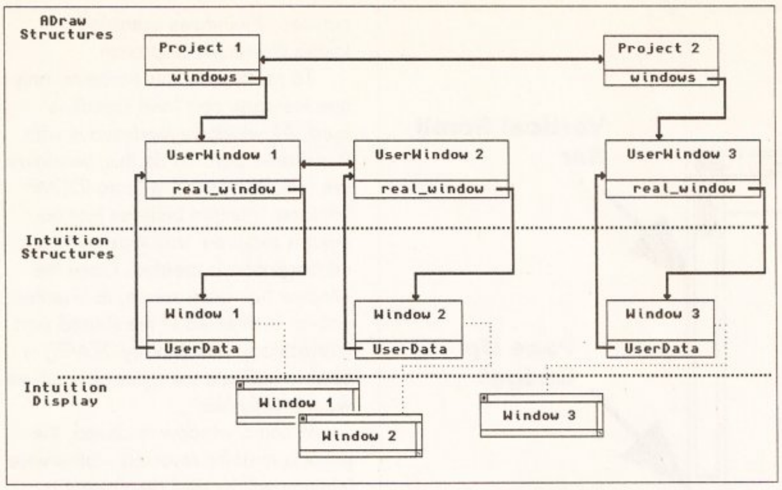
    /* If project has been modified, then check with user
    */
    if(!force &&
            project->modified &&
            ConCanRequest("Project has been modified") ==
CC_CANCEL)
                    return;
    /* Close any windows open on this project
    */
    for(node = project->windows.mlh_Head; next = node-
>mln_Succ; node = next)
            KillProjectWindow((struct UserWindow *)node);
    /* Return all the memory occupied by the project data to
    * system
    */
    FreeElementList(&project->elements);

    /* Take project of global list, use Exec function
    * Remove()
    */
    Remove((struct Node *)project);
    NumProjects--;

    /* Free the project name
    */
    FreeMem(project->name,project->name_length);

    /* Free the base memory
    */
    FreeMem(project,sizeof(*project));
}

/* InitMinList
 *
 * Setup an exec.library MinList structure for future use
 * The head and tail point at each other and the shared next
 * pointer is NULL.
 */
void InitMinList(struct MinList *list)
{
    list->mlh_Head =(struct MinNode *)&list->mlh_Tail;
    list->mlh_Tail = NULL;
    list->mlh_TailPred =(struct MinNode *)&list->mlh_Head;
}
```



An example *ADraw* structure with two projects and three windows

For each Intuition window there is one of these private structures, struct UserWindow. Each allocated UserWindow structure will have a pointer to the real Intuition window. In the opposite direction, Intuition sets aside one variable in its Window structure for use by the program, UserData. This general pointer is made to point at the corresponding UserWindow within *ADraw*.

An example with two projects and three windows is shown in the diagram at the top of the page. At the top are the bits local to *ADraw*, the list of project blocks and, attached to each project, the UserWindow blocks. In the middle are the Intuition window structures; each one has its UserData pointer referencing a UserWindow. The first part of the UserWindow structure is shown in Listing 4 below.

Structure navigation

As well as the reference to the Intuition window, there is also a pointer back up to the project that this window is looking at. With this, and all the other references, navigating from one structure to another is easy. For example, when Intuition passes input to a program, not only does it say what happened, it says which window it happened in. This information is in the form of a pointer to the Intuition window. To find the corresponding project, we just follow the pointers (see Listing 5).

To create a project window, there must first be a template – the NewWindow structure. The starting size for the window in this template is filled in when *ADraw* starts and looks at the current Workbench screen via GetScreenData(). The window title is set up to be the project name.

Once the template is set up, the window is opened, and then all the

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LISTING 5 - FOLLOW THE POINTERS

```
/* Given an Intuition window pointer, return a pointer to the
 * approprate Project structure
 */
struct Project *WindowToProject(struct Window *real_window)
{
    struct UserWindow *uw;

    /* Get to the UserWindow
     */
    uw = (struct UserWindow *)(real_window->UserData);

    /* From that, get to the project
     */
    return uw->project;
}
```

LISTING 4

```
struct UserWindow {
 /* Node to link windows to a project
  */
 struct MinNode node;
 /* Inutition window connected to this
 user window
  */
 struct Window *real_window;
 /* The project being viewed by this
 window
  */
 struct Project *project;

 /* Where window is looking in project
  */
 Coordinate x,y;

 /* Current zoom level
  */
 unsigned short zoom;

 /* More things to be added later ...
  */
};
```

LISTING 6 - ALLOCATE AND LINK PRIVATE DATA

```
/* Template for new project windows
*/
struct NewWindow NewProjectWindow = {
   0,12,      /* Top left and top right of window */
   0,0,       /* Width and height of window (Filled in)*/
   0,1,       /* Graphics pens for rendering window */
   0,         /* IDCMP flags, filled in later */
   SIMPLE_REFRESH|
WINDOWCLOSE|WINDOWSIZING|WINDOWDRAG|WINDOWDEPTH|
    SIZEBBOTTOM|SIZEBRIGHT|ACTIVATE, /* Window flags */
   NULL,      /* Gadget list, filled in later */
   NULL,      /* Checkmark imagery */
   NULL,      /* Title, filled in later */
   NULL,      /* Screen pointer */
   NULL,      /* Bitmap pointer */
   200,64,    /* Minimum width and height */
   0,0,       /* Maximum width and height (Filled in)*/
   WBENCHSCREEN       /* Screen type */
};
/* The IDCMP flags used for a project window
 */
#define PROJECT_IDCMP REFRESHWINDOW|NEWSIZE|MOUSEBUTTONS|\
GADGETDOWN|GADGETUP|CLOSEWINDOW|RAWKEY|MENUPICK|REQCLEAR
/* CreateProjectWindow
 *
 * Given a project structure, open a new window that
 * displays that project
 */
struct UserWindow *CreateProjectWindow(struct Project
*project)
{
   struct Window *window;
   struct UserWindow *user_window;

   /* Allocate private window data structure
   */
   user_window = AllocMem(sizeof(*user_window),MEMF_CLEAR);
   if(user_window == NULL) AllocError(AE_WINDOW);

   /* Set the window title to point at the project name
    */
   NewProjectWindow.Title = project->name;

   /* Add the gadgets
    */
   BuildGadgets(user_window);
   NewProjectWindow.FirstGadget=&user_window->tools[0];
   /* Open the new window - no IDCMP flags set, so no new
    * IDCMP port created
    */
   window = OpenWindow(&NewProjectWindow);
   if(window == NULL) {
             FreeMem(user_window,sizeof(*user_window));
             AllocError(AE_WINDOW)
   }

   /* Set window to use shared message port
    */
   window->UserPort = ProjectPort;
   ModifyIDCMP(window,PROJECT_IDCMP);

   /* Cross link Intuition window, user_window and project
    */
   window->UserData = (void *)user_window;
   user_window->real_window = window;
   user_window->project = project;
   project->num_windows++;

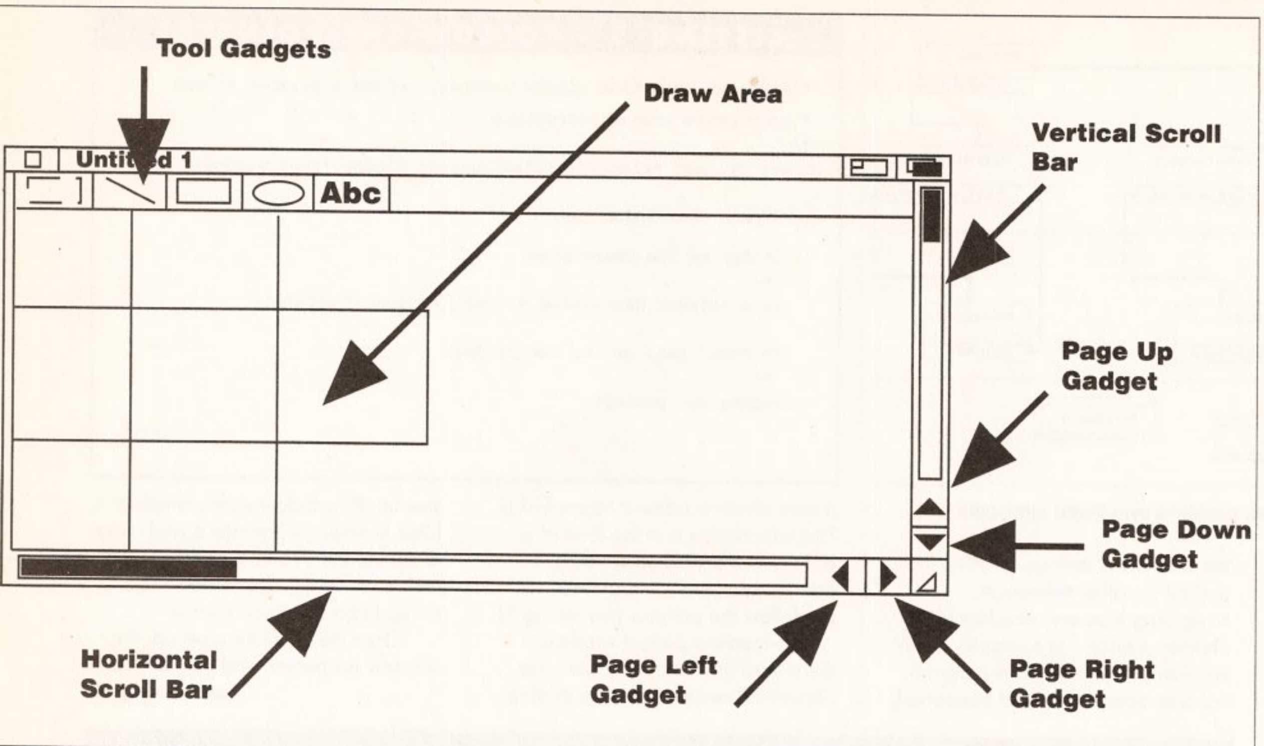
   /* Attach window to project
    */
   AddHead((struct List *)&project->windows,(struct Node
*)user_window);

   return user_window;
}
/* KillProjectWindow
 *
 * Given a private window structure, remove that view of a
 * project
 */
void KillProjectWindow(struct UserWindow *user_window)
{
   /* Take of project's window list
    */
   Remove((struct Node *)user_window);

   user_window->real_window->UserPort = NULL;
   CloseWindow(user_window->real_window);

   user_window->project->num_windows--;

   /* Free the private window data
    */
   FreeMem(user_window,sizeof(*user_window));
}
```



Each project window will have a bar of tool buttons along the top, and scroll bars at the edges

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private data is allocated and linked together (Listing 6).

Attached to each Intuition window is a message port. This is the rendezvous point for messages about input. Intuition adds messages to the port as things happen. The program can wait for new messages and, when they arrive, pull them off the port and process them. You may not be surprised to find out that the message port and messages are built on the same Exec linked lists that *ADraw* uses.

The NewWindow structure has a field called IDCMPFlags which describes what sort of input event the program will be interested in.

If any of these flags are set, then Intuition will create a new message port for a window when it is opened and leave a pointer to it in window->UserPort. If *ADraw* followed this approach there would be a new rendezvous point to check for input for every project window that was opened. From the programming point of view this is a little more work, but there is also a rather more fundamental limitation. The means by which a message port indicates that something has arrived is a signal. This is like a flag – it gets set when a message arrives and cleared when the program has dealt with it. Unlike a simple variable, it is cheap in terms of processor time to wait for a signal to be set.

LISTING 7 - ADD TO USERWINDOW

```
struct UserWindow {
    /* Elements previously declared to be in UserWindow
     */
    ...
    /* New elements:
     */
    /*
     * All the tool gadgets along the top of the window
     */
    struct Gadget tools[NUM_TOOLS];
    /*
     * The up an down scroll buttons
     */
    struct Gadget scrollup;
    struct Gadget scrolldown;
    /*
     * The left and right scroll buttons
     */
    struct Gadget scrollleft;
    struct Gadget scrollright;
    /*
     * The horizontal and vertical scroll bars
     */
    struct Gadget hscrollbar;
    struct Gadget vscrollbar;
    /*
     * Proportional gadget special info
     */
    struct PropInfo hscrollinfo;
    struct PropInfo vscrollinfo;
    /*
     * Proportinal gadgets need a dummy image - this is used by Intuition for
     * internal variables. relating to gadget, so must be unique to each gadget
     */
    struct Image    hscrollimage;
    struct Image    vscrollimage;
};
```

Tasking lullabye

When a program waits for a signal, something any Intuition program spends a lot of time doing, the Exec function Wait() will put the calling task to sleep, consuming no processor time. The task will be resumed when something else, like Intuition, sets the required signal. So what about this limitation? Well, part of signals being cheap is that there are only 32 of them for each task, and 16 of these get grabbed for predefined things.

An upper limit of 16 signals, or less if other Amiga libraries get used, means a rather low limit on the number of windows useable by taking the simple approach.

To get around this problem, only one message port (and signal) is used. All windows rendezvous with this shared port. To do this, windows are initially opened with no IDCMP flags set. Intuition believes that no input is required, and thus no new message port is created. Once the window has been set up, its UserPort pointer is directed at the shared port (ProjectPort), and ModifyIDCMP() is used to indicate the types of input we would really like.

When a window is closed, the process must be reversed – otherwise Intuition will try and de-allocate a port that it thinks is unique to the window. The UserPort pointer is simply set to NULL before calling CloseWindow().

Gadgets

Having got a window on to the screen, we need some buttons for the user to press. Each project window will have a bar of tool buttons along the top, and scroll bars at the edges, as shown in the illustration at the top of this page.

The standard system gadgets are inherited, and the creation and management of these is largely left to Intuition. The labelled gadgets in the diagram are the ones that *ADraw* will have to create and manage itself.

Each on-screen gadget is represented by a separate copy of the Intuition structure called Gadget. If there are two *ADraw* windows open then, for example, the Tool Bar gadgets in each of the windows must be held as different copies of the Gadget structure.

As each window must have its own set of gadgets, the ideal place to put all this data is in the UserWindow structure, which is already unique to each Intuition window; so the code in Listing 7 is added to the declaration of struct UserWindow.

It is important to note that all these additions are the actual structures, not pointers to some other piece of memory. This makes instances of the UserWindow structure fairly large chunks of data, but it has to go somewhere.

Since UserWindow structures are allocated on the fly, each new set of gadget structures will have to be filled in by the program. This is handled by the function BuildGadgets() – it takes a pointer to a UserWindow structure and does all the required initialisation.

All the gadgets have to be linked together into a list. A pointer to the first in the list is then put in the NewWindow structure, so that when the window opens, the gadgets are there ready.

The Tool Bar gadgets are

relatively simple, as their positions within the window remain the same whatever happens. They are set up to be boolean gadgets, so Intuition will pass a message whenever one of them is pressed.

The remaining gadgets are rather more complicated. Since the user can re-size the window, their positions relative to the origin of the window are not fixed, and Intuition does tell programs when a window has been re-sized. While it would be possible on receiving this message to pull apart the existing gadget list and rebuild it for the new size, there is in fact an easier method which can be used to get around the problem.

Gadget positions are normally given from the top left of a window. Two flags in the gadget structure – GRELRIGHT and GRELBOTTOM – can be set to say that rather than the normal case, the gadget is to be positioned relative to the bottom and/or the right of the window.

The Page Up/Down gadgets have positions relative to the bottom right (see Listing 8). As this Page Up gadget is actually in the border of the window, a flag is set in Gadget.Activation (RIGHTBORDER) to tell Intuition that when it refreshes that border, it should refresh this gadget as well.

Although the actual gadgets are allocated per window, the imagery is not. There are a fixed set of images set up within *ADraw*, and each new version of a gadget just references the appropriate one. A restriction on gadgets that use GRELRIGHT and GRELBOTTOM is that all the imagery associated with the gadget must fit within the gadget hit box. This is so that Intuition knows what to rub out when the gadget is moved via a re-sizing of the window.

All the other button gadgets are similar to the above, with different numbers. Which just leaves us with the scroll bars...

Scroll bars

The scroll bars are not as simple as a plain click on/off button, as the height or width of them varies with the size of the window, which can be addressed by using the GRELHEIGHT and GRELWIDTH flags. These say that a gadget's size is relative to the size of the window – for example, the horizontal scroll bar is the width of the window minus the width of the Page Left/Right buttons and the right-hand border.

A further problem with the scroll bars is that they need an additional lump of data for the information particular to proportional gadgets. The UserWindow structure is the victim – hscrollinfo and vscrollinfo are those data blocks. Proportional gadgets can have two sorts of knobs (the bit in the box that gets dragged): the knobs can be normal bitmaps, like any other gadget, or they can be AutoKnobs.

An AutoKnob changes size depending on how much data there is to scroll. If the AutoKnob is selected, then the GadgetRender member of the Gadget structure still points to an Image structure, although a completely empty one.

A big pitfall here is that, unlike every other case, this type of gadget actually modifies the Image structure. This means that each proportional AutoKnob gadget must have its own unique copy, and the UserWindow structure grows.

More next month

With the ability to create windows and gadgets, the application so far is an empty vessel waiting for life to be poured in – in the shape of the code to manage all the nice commodities that have been provided.

To that end, the *ADraw*-specific wiring underneath the user interface will be the subject of part three of this article, next month. AS

JARGON BUSTING

ALLOCMEM: This is a funtion in the Exec library. When called, it returns a pointer to an area of memory of a size specified by the function's parameter. This is useful for creating temporary space for data while a program is running, especially if the size of this space is unknown when the program is written.

EXEC: The part of the Amiga's operating system dealing with basic functions such as the allocation of memory to programs and the handling of multi-tasking.

INTUITION: The part of the Amiga's operating system concerned with window handling, menus and so forth. It interprets user input from the mouse and sends information to the relevant windows via the Intuition Direct Communication Message Ports. See Paul Overaa's intuition programming article on page 79.

LINKED LIST: A method of storing data. The data is collected into a series of similar groups or records; part of the data in each of these records is a pointer to the next record in the list.

STRUCTURE: A class of data storage in C whereby a group of data types - for example, integers, strings and reals - are joined together in a particular order to form a user-defined type. One of the possible types making up a structure may be another previously defined structure.

UNION: A neat trick in C that allows a single structure to store one of several different types of data in the same space. The space for the structure is initialised to be enough to contain the largest of the possible types in the union. For example, a structure designed to hold date information might contain a union for the month part of the date. This would be a union between an integer and a string, so that the month could be stored either as a number between one and twelve or as a word.

LISTING 8 - PAGE UP GADGET

```
/* Part of BuildGadgets() - Initialise Page Up gadget
 */

/* Gadget is in from right of window by its width
 */
uw->scrollup.LeftEdge     = -VSCR_BUT_WIDTH+1;

/* It is up from bottom by the size of the bottom border plus its own
 * and the Page Down gadget's height
 */
uw->scrollup.TopEdge      = -(bottom_width + VSCR_BUT_HEIGHT*2);

/* The hitbox for the gadget
 */
uw->scrollup.Width        = VSCR_BUT_WIDTH;
uw->scrollup.Height       = VSCR_BUT_HEIGHT;

/* Use images for the gadget picture, and position relative to bottom right
 * of window
 */
uw->scrollup.Flags        = GADGIMAGE| GADGHIMAGE| GRELRIGHT| GRELBOTTOM;

/* Refresh this with rest of system updates
 */
uw->scrollup.Activation   = GADGIMMEDIATE| RIGHTBORDER;

/* A plain boolean gadget
 */
uw->scrollup.GadgetType   = BOOLGADGET;

/* Imagery to use for normal and selected
 */
uw->scrollup.GadgetRender= (void *)&IRender_ScrollUp;
uw->scrollup.SelectRender= (void *)&ISelect_ScrollUp;

/* User data so that this gadget can be identifed when it is hit
 */
uw->scrollup.GadgetID     = GID_SCROLLUP;
```

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Get the message

BEGINNERS START HERE

What is Intuition?

Intuition actually means different things to different people.

First and foremost, and this is the way most programmers think of it, Intuition is just a mass of pre-written system routines designed to make the programmer's job of working with windows, gadgets and menus easier. Secondly, Intuition is the name given to the 'personality' behind the high-level 'user interface' part of the Amiga's operating system (that is, the part with which the user interacts when using gadgets, menus and the mouse). This personality, however, comes not, to a large extent, from the underlying system routines themselves, but rather from the fact that Amiga programmers are encouraged to adopt a consistent approach to building the user-interface parts of their programs.

What about Messages?

On the Amiga, a great many things are happening all the time. At the same time as Intuition is checking for user activity, programs are asking for the use of printers, disk drives, memory and so on. Intuition, being the 'top level', has to be able to communicate with any and all of the programs which are running, to pass on information about what the user has done. At the same time, it must be able to receive messages from programs when they need things like access to the disk drive. The mechanism used to handle all of the information zooming about between programs and Intuition is based on the Exec system software's message system.

Paul Overaa investigates the message passing facilities built in to Intuition, and looks at how to write your programs to take the best advantage of them

"If you've ever wondered how an Amiga program knows when a gadget is selected, or when the mouse is moved, here's your chance to find out ..."
Paul Overaa

Intuition, the Amiga's User Interface, was designed to ensure that a user's interaction with the machine is simple, enjoyable and consistent (in other words... intuitive). The tools to achieve this are, to a large extent, provided by Intuition itself, and provided that the proper conventions are followed, programmers are able to take advantage of multi-window facilities, gadgets and many other Intuition facilities to help simplify their programming tasks.

If it wishes, a program can open virtual terminals – areas from which it receives and delivesr information. Such a program regards its virtual terminal as covering the entire screen, and is usually totally unaware that other programs may have windows on display at the same time. Users, however, have a rather different view. They see a program's terminal as a window which may be moved around, resized, or even hidden from view. From a programmer's viewpoint Intuition is good news – it can, and often does, handle these inter-program display changes without the program ever even knowing that they occurred. The end result of all this high-tech jiggery pokery is that the programmer's life is made a little simpler, without having to sacrifice any of the program's user-friendliness.

Waiting patiently

Even when your Amiga is just sitting there doing nothing, Intuition is still active, continually listening for any information that may arrive from the input devices (mouse, keyboard, joysticks, serial port and so on). It looks at this data, uses what it regards as useful to itself, and then passes the rest of the data on to any other interested parties – in other words, to any programs which are running on the machine.

If you, as a programmer, had to cope with everything that Intuition took an interest in, you would really have your work cut out. Fortunately, then, programs can be selective about the type of events they wish to receive. If, for instance, a program needs to know when disks are inserted or removed, it asks Intuition to send it a message about these events as and when they occur. If the program doesn't need to worry about disk insertion and removal then it just does not ask Intuition for those types of messages to be passed on in the first place.

One of the ways in which Intuition can be coaxed into sending relevant information to a program is via Intuition's Direct Communications Message Port system, affectionately called the IDCMP. This is built upon the Exec message system, and provides a two-way communication process which allows programs to both transmit messages to, and receive messages from, Intuition.

Message structure

The 'IntuiMessages' used to carry the packets of information have a standard layout which is based on an extended exec Message structure. As a C structure, an IntuiMessage takes the following form:

```
struct IntuiMessage  {

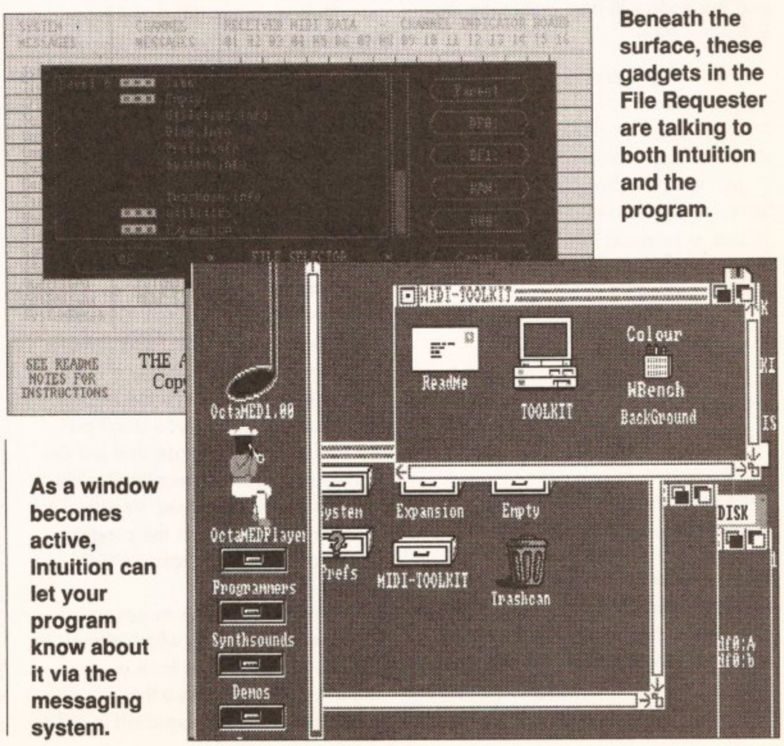
    struct        Message
ExecMessage;
    ULONG         Class;
    USHORT        Code;
    USHORT        Qualifier;
    APTR IAddress;
    SHORT         MouseX,
MouseY;
    ULONG         Seconds,
Micros;
    struct Window*IDCMPWindow;
    struct IntuiMessage
*SpecialLink;

        };
```

In order to use IntuiMessages, you need to be able to extract information from the structure. Below is a list of the purposes of the various fields in the structure:

ExecMessage: This field contains message characteristics, such as the length of the message's body data, which are needed by the Exec. You

continued on page 80



Beneath the surface, these gadgets in the File Requester are talking to both Intuition and the program.

As a window becomes active, Intuition can let your program know about it via the messaging system.

continued from page 79

are unlikely to want this information and you should certainly not interfere with it or alter it in any way.

Class: This is a variable whose bits correspond directly with the equivalent IDCMP flags. You will usually check the contents of this variable against particular flag definitions so that you know what type of message you have received.

IAddress field: This provides the address of the object to which the message refers. Whenever you have to find out about the current state of Intuition objects (for example, whether a Gadget is on or off), you will use this address to locate the object's structure.

You will often see the Class and IAddress variables used jointly for selecting message handling routines

BLITS & BOBS

According to the dictionary, intuition is "The power of the mind by which it immediately perceives the truth of things without reasoning or analysis: a truth so perceived, immediate knowledge in contrast with mediate." Why can't dictionary compilers write in English?

and, when appropriate, passing the address of the object to them. In C, 'switch' statements are frequently used to handle the message stream, and the code will frequently take the following form:

```
/* Read the data from the message
structure, then... */
/* identify message type */
class = message->Class;
/* get object's address */
address = message->IAddress;
/* then do something with it */
switch (class){
  case GADGETUP:
    GadgetActivity(address); break;
  case CLOSEWINDOW:
    ExitRoutine(); break;
  default:
    UnexpectedMessage(); break;
          }
```

The Code and Qualifier fields depend very much on the type of message. For instance, if the keyboard device is providing raw keyboard data then the Code field will contain the untranslated character and the Qualifier field will tell you whether the [Shift] or [Ctrl] keys were also pressed.

```
Bit 17
  |
  v
00000000 00000001 00000000 00000000

This is the mask
arrangement needed
if mp_SigBit = 16
```

The '1' is at bit 17 because it has been shifted left 16 times.

Each message is stamped with mouse co-ordinates and the system time. MouseX and MouseY are the co-ordinates of the mouse at the time given by the Seconds and Micros fields. The other two fields in the structure are IDCMPWindow, which is a pointer to the relevant Window structure, and SpecialLink, which is used only by the system.

Making a start

The easiest way to gain access to an IDCMP is to specify one or more of the IDCMP flags when you open a window – see the boxout on the next page for a rundown of the flag messages and what they mean. If Intuition sees that you've set one or more of the IDCMP flags in the NewWindow structure then it will automatically create a pair of message ports for that window. One port, the WindowPort, is used by Intuition, while the other is referred to as the UserPort and is for the program's use. Intuition arranges for signal bits to be allocated to the message ports, and it is by looking at these signal bits that we can tell when messages have arrived.

Both IDCMP message ports will be part of the Window structure describing the window being used. A message port structure contains a field designed to hold an 8-bit value called mp_SigBit, which represents the signal bit number which has been assigned to the port.

The messages which we have requested will arrive at the UserPort, so if g_window_p is a pointer to the Window structure, then the C code needed to refer to the signal bit number of the UserPort looks like this:

```
g_window_p -> UserPort -> mp_SigBit
```

We will want to examine the allotted signal bit in order to tell whether there are any messages for us. Often, when waiting for gadgets to be hit, the program will be just sitting there waiting for particular types of message to occur. With the Amiga's multi-tasking system, you don't poll for such events, becuase that just ties up the processor unnecessarily, but instead you use the Exec Wait() function, which allows the program to sleep until some chosen event wakes it up.

Wait() requires us to pass a parameter indicating which signal bits we are interested in. It is important to realise that the parameter which is expected is a 32-bit mask – it is **not** the signal bit number contained in the UserPort's mp_SigBit field. The difference between the two forms is best seen by looking at the example at the top of the page.

To convert the mp_SigBit value to a mask we left-shift the number 1 an appropriate number of times, namely mp_SigBit times. In C we use the << operator to achieve this, so the code required could take the following form:

```
shift_required =
    g_window_p -> UserPort -> mp_SigBit;
mask = 1 << shift_required;
Wait(mask);
```

This can be combined into a single line of code; the result is the following succinct but obtuse C line that you've no doubt already seen in the Amiga manuals:

```
Wait(1<<g_window_p -> UserPort
->mp_SigBit);
```

When this line of code is executed, the program goes to sleep – that is, it becomes inactive – until an event occurs which results in a message being sent to our UserPort. When such a message is received, the program needs to do several things:
a) It must collect the message by using the GetMsg() function, and this requires the UserPort address as a parameter.
b) It must extract the necessary information from the message.
c) It must tell Intuition that the message has been dealt with, which it does by using the ReplyMsg() function. The parameter needed in this case is a pointer to the message.

As far as our example goes, we are interested in the part of the program which handles these messages – that is, the part which detects them, identifies their class, and performs some appropriate actions.

There are a couple of points that need watching here: first, remember that the 'message has arrived signal' actually means that one *or more* messages have arrived, so a loop arrangement is needed which can handle any number of messages – not just one. Secondly, these messages will continue to arrive for as long as the program runs, so another loop arrangement (an outer loop) is needed which continues to look for messages until such time as the program terminates.

Putting all of these ideas together results in a piece of code which, if you've ever examined the demo programs which I write for *Amiga Shopper*'s sister magazine, *Amiga Format* (come on, surely someone must look at the source code listings), you'll already have seen many times before. For those who haven't, the code fragment is printed below. AS

```
/* We enter this code after setting up our window and gadgets.
At this point, we are simply waiting for the user to do
something that's interesting - i.e. select a gadget or
terminate the program by closing the window. */
                    terminate=FALSE;
do {
   Wait(1<<g_window_p -> UserPort -> mp_SigBit);
   message=GetMsg(g_window_p -> UserPort);
   do{
        class = message -> Class;
        object = message -> IAddress;
        ReplyMsg(message);
        if (class==CLOSEWINDOW) {message=NULL;
terminate=TRUE;}
        else {
                switch (class)
                {
                case GADGETUP: gadget_activity(object); break;
                default: do_nothing(); break;
                }
                message = GetMsg (g_window_p ->UserPort);
        }
   }while(message);
}while(!terminate);
/* We reach here after the user has hit the CLOSEWINDOW gadget
and at this time do whatever is necessary to terminate the
program */
```

This C code fragment waits for messages to arrive from Intuition, then handles them as required by the program. Remember that it must be capable of accepting and handling multiple messages – not just one.

JARGON BUSTING

ADDRESS: A value used to identify a memory location.

EXEC: The part of the Amiga's operating system which handles multi-tasking, I/O (input/output) and other system house-keeping tasks.

FUNCTION: The C language's name for a subroutine.

IDCMP: An acronym (well nearly) for Intuition Direct Communications Port.

MULTI-WINDOW: A screen display system capable of supporting more than one window at once. Intuition contains all the system routines for handling the Amiga's windowing facilities.

POLL: Waiting for an event to happen by using a loop which just keeps looking for, and testing, some condition until that condition occurs. Polling techniques could, for example, be used to monitor keyboard activity. The advantage of polling is that the programming is simple. The disadvantage is that this technique ties the processor up unnecessarily – whilst a poll loop is executing the processor can't do anything else!

STRUCT: A C keyword used to define C structures.

STRUCTURE: A complex variable supported by the C programming language. Structures can contain any number of different variable types.

USER INTERFACE: The part of the computer system with which the user communicates. The Amiga's user interface has both the WIMP (Window, Icon, Menu, Pointer) style and the CLI/Shell window command line interfaces available.

VARIABLE TYPE: Just like Basic, the C language supports the idea of different variable types. With C, however, this is taken further, because users can build their own type definitions out of the inbuilt int (integer), char (character), float (single precision floating point) and double (double precision floating point) types which C provides. The ULONG, SHORT, USHORT, and APTR types that you'll see references to in the IntuiMessage structure are variable types which are specific to Amiga programming.

IDCMP Flag Definitions

Standard names for the IDCMP flags are available in C header files. They should always be used in preference to numeric values or non-standard names. The flags are used to both select which types of messages you wish to receive and to distinguish between the various types of message that may arrive at your message port. The definitions fall into six categories and the place to look for full details is the Addison Wesley *Libraries and Devices* RKM manual. Here, however, are some brief details to get you going...

Window Flags

ACTIVEWINDOW You'll get a message with this flag set when the window becomes active.

INACTIVEWINDOW This provides you with a message when your window becomes inactive.

NEWSIZE This is a message sent when an application's program window is resized.

REFRESHWINDOW You will be told when your window needs refreshing with this flag.

SIZEVERIFY Intuition will check with your program when a user tries to resize a window, and will not allow the event to occur until the program says that it's safe to do so.

Gadget flags

GADGETUP When the user releases the left mouse button with the pointer over a gadget that has the RELVERIFY flag set, the program will receive a message of this class.

GADGETDOWN If the gadget was created with the GADGIMMEDIATE flag set, then this message is sent when the gadget is selected.

CLOSEWINDOW If you have a close gadget in your window, then setting this flag will provide you with a message telling you when the gadget has been selected. Intuition doesn't close anything: it leaves that up to the program.

Mouse Flags

MOUSEBUTTONS This causes reports about mouse button events to be passed providing that they do not mean anything to Intuition. The Code field of the message tells you which button was pressed or released, and it will contain one of the following four flags: SELECTUP, SELECTDOWN, MENUUP or MENUDOWN.

MOUSEMOVE If the window, or a gadget within the window, is reporting mouse events, then this flag ensures that you receive the XY co-ordinate messages of the mouse's position as it moves.

DELTAMOVE With this flag set, the mouse movement is reported as co-ordinate changes rather than as absolute values.

Menu Flags

MENUPICK You will get a message of this type if the user has pressed the menu button. If an item was selected then the menu number will be in the Code field. If no selection was made, this field will be set to MENUNULL.

MENUVERIFY This is a message sent as part of a particular verification mode which allows programs to temporarily halt or cancel menu operations.

Requester Flags

REQCLEAR If this flag is set, then your program will receive a message when a requester is cleared from a window.

REQSET Setting this flag will get you a message the moment a requester opens in your window.

REQVERIFY If this flag is set, Intuition will ask your program if it is OK to put a requester up in your window. Even system requesters will be blocked until your program replies to the message – so make sure that your program checks for it.

Miscellaneous Flags

DISKINSERTED If this flag is set, you will be told about disks being inserted (or removed).

DISKREMOVED Again, you will be told about disks being inserted or removed. Two flags are needed because when these events happen you need to know which one has occurred.

NEWPREFS With this flag set, your program will be told if the user makes any changes to the Preferences settings.

INTUITICKS This gives you timer events when your window is active. The messages arrive about ten times a second. INTUITICK messages do not queue up like other messages, because the moment Intuition realizes that you haven't replied to a timer message it will stop sending them.

RAWKEY This provides messages containing raw key codes from the keyboard. The data is extracted from the Code field but, by using the Qualifier field, you can get extra information about whether the Shift key, Control key and so on have been pressed in conjunction with the key.

VANILLAKEY This gives you the key code information after it been processed using the Keyboard device's current character keymap.

AMOS action



"Welcome to the AMOS column: the place where, every month, you can find in-depth tutorials and lots of hints and tips for use with Europress Software's *AMOS* Basic interpreter. So get your brains in gear for a useful tutorial on taking control of this great language."
Phil 'Snouty' South

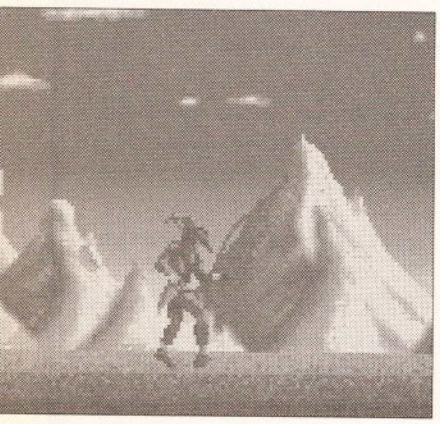
This month Phil South looks into object control with the mouse and the joystick. Plus a look at the first ever AMOS megademo

Welcome back to the world of AMOS, where everyone can unleash the real power of their Amiga with simple instructions from the Basic command set. AMOS is a strange beast, but a very flexible one, and this is where you can find out what's new with this exciting programming language.

Get the ball rolling

I've recently found out a couple of things I didn't know about AMOS, both involving the mouse.

The first thing was about the use of the right mouse button, and there are two interesting uses for this. On the file requester I couldn't figure out how to get to another disk drive or device without waiting till the thing had read the disk and after having to laboriously type the name in. Now you may just laugh and tell me you knew how to get round this all along, and if you do then bully for you. But if you have the same problem as I did, here is the answer.



***Madness Week*'s menu selector looks rather familiar *n'est pas*?**

If you click the right mouse button in an AMOS requester, a list of current devices appears – drives, RAM: etc. Click on the one you want and Bob is very much your uncle. Simple really, but I never actually saw this in the manual.

The reason I didn't see it is also simple – it's not actually there. Let's see ... yup, there's mention of something familiar on page 15.

In the paragraph about changing the current drive it says something about a row of buttons for each drive. Wrong. The programmers must have changed their minds because, in order to bring up the selections, you must press the right button. Then, once you've selected your disk and directory, simply click on the SetDir button and this directory will pop up every time.

It's so simple even my pet mouse could do it. (OK, so his paws are too small to move the Amiga mouse, but you get the gist.)

The second way of using the right button is for selecting text in the program. In a normal word processing or text editing program, you can use the left mouse button to stroke a highlight around the text you want to mark, then cut, paste and copy it around the current and other documents. In AMOS the right button performs this function.

OK folks, let's give it a go – load a program, then put the pointer on the first character of the listing. Press the right button and move the mouse down. You've just selected a block that can be cut and pasted, and even saved off as ASCII text using the Block Menu's ASCII Save option. Hoorah! It's quite staggering what you can do when you put your mouse to it.

Demo corner

Madness Week by Syntex is the latest demo to come from France, and it's a real killer.

It's a megademo, just like the big demos from the assembly coders that you find in the public domain, and it covers two disks with the very best in AMOS sound and graphics.

The program has a intro, like all demos, and a chooser which allows you to use the joystick to choose which part of the demo you want to see. As well as a large logo whizzing around the screen and all that kind of stuff, there's also a stunning example of how to program copper plasma using AMOS. Plasma is a very smooth shaded and rippling colour graphics effect, and AMOS is the only way you can get it outside of C or assembler – at least at this kind of speed. A lovely effect and one well worth seeing. The program is hard to get into and read, because it's too large to unfold the procedures I think, but the effect is charming. As soon as I've taken the thing apart, I'll let you know how it's done. In the meantime, get hold of a copy of the demo and check it out. I'm sure you won't be at all disappointed.

You can get the two-disk *Madness Week* demo from the AMOS PD Library at £2.50 per disk, but don't forget that you'll need 1Mb of RAM to run it. Just ask for disk numbers 207 and 208, and Sandra will know what you want.

Moving Experience

You interact with AMOS programs using the keyboard, mouse and joystick and, although the keyboard is easy (if you know Basic), getting the computer to understand what you want using the mouse and keyboard is harder to master. Until now that is.

Hide is the first command that springs to mind. This command actually hides the mouse pointer. The reasons you would want to do this are manifold, but mostly it's to free the screen for a stonking good picture and to avoid giving the user the distraction of wanting to click on something. To get the pointer back afterwards, you simply need to do a Show command.

So, a typical structure would go like this:

```
Screen Open 0,640,256,4,Hires
Load Iff "hires_picture_here"
Hide
Wait Key
Show
```

Beginners start here

What is AMOS?

AMOS is powerful version of the Basic programming language with a lot of features for sound and graphics built in. All you have to do is create sound samples and music scores using a tracker program (such as *MED* or *Soundtracker*), and graphics in a paint program (such as *DPaint* or *DigiPaint*), and AMOS enables you to create professional-looking programs.

What sort of things can I program in AMOS?

Anything, from a demo with moving copper bars, scrolling messages and bouncing bob graphics, to a game, or a serious program such as a database.

Is it difficult to learn?

Basic stands for Beginners All-purpose Symbolic Instruction Code, and it is very easy to learn as most of the commands are English. PRINT means write words on the screen, INPUT gets input from the keyboard and WAIT KEY waits for a key to be pressed. Easy.

Can programs be run without the main AMOS program so I can give them away to friends, or release them in the public domain?

AMOS has a companion program for this called RAMOS, which enables programs written in AMOS to be put on a self-booting disk for distribution without the main program. Everything you put into the program can be reproduced by RAMOS, so yes you will be able to create programs and demos to give away or sell.

(Don't forget that you need to use a Screen Open before you can load an IFF picture. If you don't, you'll get a 'Can't fit the picture in the screen'-type message.)

It's a good thing to Hide your pointer on main title pictures and print a 'Press Any Key' prompt on the picture to make people trigger the Wait Key command to carry on.

The next mouse command is Change Mouse. This allows you to alter the shape of the mouse pointer to a preset design, or even one of your own. You can otherwise do this in 'system-configuration' and load it on to your RAMOS disk, but Change Mouse is an elegant way to do the same thing from within AMOS.

The way you use this handy command is like this:

```
Change Mouse 1
```

where the 1 could be either 1, 2 or 3. The preset pointer shapes are:

1 for a normal pointer
2 for a crosshair
3 for a mouse clock

And if you choose a 4, then the mouse pointer will be taken from your sprite bank.

It's not actually that simple though, as the sprite number is derived by subtracting 3 from the number given, so:

```
Change Mouse 4
```

gives you sprite 1 of the current bank, while:

```
Change Mouse 5
```

gives you sprite 2, and so on.

AMOS is really good at simplifying the reading of hardware. So for reading, if a mouse button has been pressed, you just use either the Mouse Key or Mouse Click commands. And to set or read the position of the mouse pointer on screen you can use the much more simple X Mouse or Y Mouse instructions. (Much more simple than Basic *ordinaire*, that is.) And finally, you can limit the mouse to certain areas of the screen with the Limit Mouse command. Here is a short program with examples of these commands for you to try:

```
Print "Mouse pointer on"
Wait Key
Hide
Cls
Print "Mouse pointer off"
Wait Key
Show
Cls
Change Mouse 3
Print "Mouse back again, but altered"
Print "Move mouse and press button"
Cls
Proc CZECH
End

Procedure CZECH
Do
   Home
   X1=X Mouse : Y1=Y Mouse
   Print "Mouse location = ";X1,Y1
   K=Mouse Key
   If K=0 Then K$="None"
   If K=1 Then K$="Left"
   If K=2 Then K$="Right"
   Print "Mouse key pressed = ";K$
Loop
End Proc
```

The joystick, is read in a similar no-nonsense way. The Joy command returns a figure telling you what state the joystick is in. Take a look at the segment of code immediately below:

Although this requires you to set up DIM statements, you can read joystick port 1 and pass the information to a sprite (or in this case a Bob) move command to shift the thing around the screen.

As well as using the comprehensive Joy command, you can look at each direction singly with the Jup, Jdown, Jleft and Jright commands, along with Fire to check the mouse button:

```
Do
   If Jleft(1) Then Print "Left"
   If Jright(1) Then Print "Right"
   If Jup(1) Then Print "Up"
   If Jdown(1) Then Print "Down"
   If Fire(1) Then Print "==FIRE!=="
Loop
```

```
Rem Joystick demo code
X1=160 : Y1=100 : Rem sets the starting position of object
IMAGE=1 : Rem Sets image used by object
Do
 Bob 1,X1,Y1,IMAGE : Rem move bob
 Rem Read joystick and get new coordinates
 J=Joy(1) and 15 : Add X1,DX(J),10 To 300 : Add Y1,DY(J),10 To 190
 Exit If Joy(1)>15 : Rem test fire button
Loop
```

Time to go

In the next issue I'll be doing a beginners' tutorial on AMAL – one of the more powerful aspects of AMOS – and the month after that I'll talk about how to pass this control information to a sprite, then you'll be able to animate and shift stuff around the screen to your heart's content. In the meantime, Abyssinia. AS

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TERRIFIC TIPS FOR AMOS

Every month I will be printing hints and tips on AMOS from my own sources and from you, the readers. If you have any hints and tips (preferably accompanied by mini listings) you want to send me, whack them on paper or a disk and send them to: Phil South, AMOS action, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Or you can e-mail me on CIX (snouty@cix.co.uk), Micronet (219997854), Telecom Gold (74:MIK2077) or The Direct Connection (uad1135@dircon.co.uk).

Disk magazine buyers might like to know that there is an excellent regular feature on AMOS in *Newsflash*, produced by Martyn Brown of 17 Bit . The AMOS features are little programs that Martyn has written and are saved in both AMOS and ASCII format, so you can either load them up and run 'em, or you can Merge ASCII on them to incorporate the code in your own programs. Here is a little taster from *Newsflash* 16 to create those nice VU meter bars you see in most assembly code demos:

```
'
' VU-BARS by Spadge
'
' LOAD AN .ABK MUSIC FILE!!!
'
Cls 0
Music 1
ST: Show On : Cls 0 : Screen Open 0,400,256,2,LORES : Cls 0 : Palette 0,$FF
 C1=0 : C2=0 : C3=0 : C4=0
View
Gosub RB
Do
V1=Int(Vumeter(0)/2) : V2=Int(Vumeter(1)/2) : V3=Int(Vumeter(2)/2) : V4=Int(Vumeter(3)/2)
If V1>C1 Then C1=V1
If V1<C1 and C1>0 Then Dec C1
If V2>C2 Then C2=V2
If V2<C2 and C2>0 Then Dec C2
If V3>C3 Then C3=V3
If V3<C3 and C3>0 Then Dec C3
If V4>C4 Then C4=V4
If V4<C4 and C4>0 Then Dec C4
Bob 1,160,180,C1 : Bob 2,170,180,C2 : Bob 3,180,180,C3 : Bob 4,190,180,C4 : Wait Vbl
Loop
RB:
Rem
Set Rainbow 0,1,35,"","","" : Rainbow 0,0,220,35 : Colour Back 0 : Restore RDATA7
For C=0 To 34 : Read CVA : Rain(0,C)=CVA
Next C : View : Return
RDATA7:
Data $0,$0,$0,$544,$655,$766,$877,$988,$A99,$BAA,$CBB,$DCC,$EDD,$FED,$FEC,$FEB
Data $FEA,$FE9,$FE8,$FE7,$FD6,$FC5,$FA3,$F92,$F81,$F70,$E60,$D50,$C40,$B30,$A20,$910
Data $800,$700,$600,$0,$0,$0,$0,$0
```

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Cracking the Shell

Mark Smiddy puts on his surgeon's gown and explains how to re-constitute those dead disks



"DISKDOCTOR is the AmigaDOS equivalent of an ambulance. I'll show you how to call it so it gets there in time."

Mark Smiddy

BEGINNERS START HERE

What does formatting do?

Put simply, the process of formatting a disk prepares it for use with a specific computer. It divides the disk into hundreds of numbered segments called sectors, which are used to store the data. Disks are divided up to make more efficient use of the space available and maintain a reasonable speed.

The process takes place in two distinct phases on the Amiga: first, each track is divided into 11 sectors, each capable of storing 512 bytes of information. This gives 1760 sectors on a disk, which makes 880K of space available. Next, during the initialising phase, the disk is prepared for AmigaDOS. This process reserves four sectors for private system use: two for the boot sectors used by boot disks, one for the root block as used by the root directory and one for the bitmap – a map of free sectors. The bitmap is similar to the FAT (File Allocation Table) found in other versions of DOS (MS-DOS etc) but is far more efficient.

What does NDOS mean?

It refers to a disk that has been formatted by the Amiga, but has not been initialised for use with

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Disks go wrong – this is a fact of life. However, mistakes can be made and there are times when a copy of a file is either locked up in an archive somewhere or, perish the thought, a unique original. The latter can happen when the Amiga, for reasons known only to itself (or the local electricity board), decides to crash during a save operation. You should use DISKDOCTOR as soon as a disk starts to show any signs of getting crabby. A typical example would be a requester stating:

```
KEY <nn> invalid, disk
structure corrupt, use
diskdoctor to correct it.
```

Although much maligned by some, AmigaDOS offers a simple command that can even salvage disks when they have been partially formatted – ie, with FORMAT's QUICK option. The syntax could not be simpler:

```
1>DISKDOCTOR df0: ; fix disk in drive 0.
```

When DISKDOCTOR completes, and it can take quite some time, it will ask you to copy files to another disk and reformat this one. Take the advice.

Last ditch doctor

Before reading further, a few cautions: DISKDOCTOR should only be used as a last resort – it is meant for single drive machines and therefore cannot take advantage of a second drive. This implies it has to work on the broken disk. And if anything should happen, poof! There are some more effective disk salvage utilities around for those lucky enough to own two drives. One of the best, Dave Haynie's excellent *DISKSALV*, is available from most good public domain libraries.

Also, DISKDOCTOR should be used with extreme caution on FFS disks. For most users, this disk type will be a hard disk and it is vital to ensure the DOSTYPE keyword in the Mountlist (in the DEVS: directory) is correctly set to 0x444F5301 (that's ASCII for DOS1).

Never use the DISKDOCTOR on a hard disk or other FFS disk unless you have checked the DOSTYPE. The structure of the data blocks is different under FFS – DISKDOCTOR will think they are bad blocks and probably delete them.

```
AmigaShell
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:> dir df0:
1.SYS:> diskdoctor df0:
Disk Doctor V1.3.5
Insert disk to be corrected and press RETURN
Hard error Track 63 Surface 1
Hard error Track 64 Surface 1
Hard error Track 71 Surface 1
Reading cylinder 79
Operation complete
You should copy files required to a new disk and refor
mat this disk
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:>
1.SYS:>
```

A familiar doctor's note for those of you suffering from floppy disk failure – our office disk lost three tracks when we attacked it with a Biro.

The following errors and messages may be generated by DISKDOCTOR. These are arranged in alphabetical order for quick reference. You may, therefore, have to read the section more than once to grasp the meaning of some errors. Keep this list handy as you might need it someday.

> ***"Some game disks show up as NDOS – do not try to recover them."***

- **ATTENTION: Some file in directory <name> is unreadable and has been deleted.**

A file in sub-directory <name> has been so totally corrupted that it is now totally unreadable and even DISKDOCTOR can't find out what it was called. Files in this state can't be salvaged and are therefore discarded by the program.

- **Block zero failed to format – Sorry!**

In very dire circumstances track 0 may fail to format, which means you've got a seriously damaged disk. If this happens, the disk is probably beyond saving (by DISKDOCTOR at any rate). Block zero contains vital information used by AmigaDOS, such as the disk type. If this cannot be re-constituted, the disk will be unreadable. DISKDOCTOR terminates if this error occurs. If this happens, test format a blank disk on the same drive to make sure the drive or hardware is not at fault before trying on another drive.

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- **Cannot write root block – Sorry!**

This is a fatal error as far as DISKDOCTOR is concerned – it cannot recreate the disks root block, from which all other files are found. Like the block zero formatting error (above) this does not spell total doom if you have DISKSALV or something similar. See note for: Block zero failed to format – Sorry!

- **Device <name> not found**

The device <name> could not be found or does not exist. This is usually caused by a typo. Are you sure that you have entered the device name correctly?

Got a problem John?

If you are bogged down with any aspect of AmigaDOS whatsoever, drop a line detailing your conundrum to: Mark Smiddy, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. I'll do my best to lose it on my desk – er, figure out an answer. Sorry, no personal correspondence can be entered into. (Thanks for the Roses, Joyce.) Desperate people, with no regard for telephone bills, can EMail me on CIX "SMIDOID" or find me lurking in the *Amiga Shopper* conference.

- **Disk Doctor cannot be run in the background**

DISKDOCTOR is an interactive command and running it in the background would be silly. If you must multi-task it, open another Shell window or use the script below.

- **Disk must be write enabled**

DISKDOCTOR wants to write all over the source disk – that's the way it works. First make sure you are doctoring the right disk, then close the write enable shutter.

- **Disk type mismatch – formatting block zero**

The disk ID is something AmigaDOS doesn't recognise or is not what it is supposed to be. DISKDOCTOR will attempt to salvage the disk from scratch. This sort of damage is typical of virus infection.

- **Delete corrupt files in dir <name>?**

DISKDOCTOR has found some dodgy files in the sub-directory <name>. You have the chance to leave them untouched or get rid of them. Command files should be discarded – it is unlikely they will work again. Data (text, picture and sound) files may be recoverable and can be left for later examination. You must enter Y or N at this prompt to allow DiskDoctor to continue. If <name> is a command directory, such as C, System, DEVS and so on, these files must be discarded.

- **Error: Unable to access disk**

This is just another way of saying: "Excuse me, but you forgot to put a disk in – just thought you'd like to know ..."

- **Failed to read key <nn>**

Block <nn> could not be read – this is probably due to a hard error on the disk detected during the scan.

- **Failed to rewrite key <nn>**

Block <nn> could not be rewritten to the disk. The most likely cause is a physical error on the disk.

- **Hard error track <nn>**

Track <nn> appears to be physically damaged in some way. Recovery from this is not generally possible in DISKDOCTOR. Data stored in the affected block is lost.

- **Inserting dir <name>**

Sub-directory <name> has been salvaged and is now being placed in the root directory.

- **Inserting file <name>**

File <name> has been recovered and is now being placed in the root directory. This happens when the sub-directory that <name> belonged to has been destroyed by an error.

- **Key <nn> of <name> is out of range**

The block <nn> belonging to file <name> exceeds the range allowed for the device.

For instance, there are 1760 blocks on a floppy disk and every single block must point to one of those. This pointer error may be partially recoverable if DISKDOCTOR can find some other fragments of the same file.

- **Key <nn> is unreadable**

The block could not be read – this block probably lives in a sector with a hard error.

- **Not enough memory**

DISKDOCTOR does not have enough memory to operate. In the unlikely event of this happening, shut down as many processes as possible or try re-booting the machine. A curious bug in the program also causes this error when an invalid device name is specified: PAR:, SER:, etc.

BLITS & BOBS

AmigaDOS offers the best data security (based on sector redundancy) of any home computer, but all at the expense of operational speed.

- **Now copy files to a new disk and reformat this disk**

Do it. This is DISKDOCTOR's handshake. It has done all it can to save the patient and now leaves you in charge of picking up the bits and salvaging what you can.

- **Parent key of <nn> is <yy> which is invalid**

The block <nn> cannot be connected to the list because its parent block <yy> has been irreparably damaged or its pointer is outside the range allowable for the device in question.

- **Replacing dir <name>**

The sub-directory <name> has been unaffected by any errors present on the disk and it is being reinstated where it was.

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AmigaDOS. Such disks cannot be used by AmigaDOS, although DISKDOCTOR can recover them if they were originally AmigaDOS disks. Some commercial (game) disks show up as NDOS – do not try to recover them.

How much information can I fit on a disk?

How long is a piece of string? *(About as large as a table – ed.)* The absolute limit is 878K, but some of that is used by AmigaDOS. For instance, every directory you create grabs 512 bytes and every file created grabs at least 1,024 bytes. 488 bytes of user data are stored in each data block but, because of the way AmigaDOS works, you cannot store 488 x 1,758 (873K) of data. The practical limit is closer to 800K. Look at it another way: if you created 1,756 directories, you would have used 876K of store. It depends entirely on the type of data you are storing. Lots of little files take up more room than a single large one.

- **Replacing file <name>**

The file <name> has been unaffected by any errors on the disk and it is being reinstated to its original position.

- **Root track failed to format – Sorry!**

The root track (39, upper side) is where all the main directory information lives on a disk. DISKDOCTOR has tried to format it in an attempt to pick up the bits and failed. It can do no more.

- **Unable to read disk type formatting block zero**

Block zero contains such information as the boot sector and the disk type. If this information is missing because of a faulty track, DISKDOCTOR tries to format it and start over again.

- **Unable to open disk.device**

This should never happen. The trackdisk.device is part of Kickstart and must already be open for the disks to be working at all.

- **Unable to write root – formatting root track**

There is a read/write error at the

JARGON BUSTING

Block: In general terms, a sector on the disk. Under AmigaDOS there are several different block types – determined by what information is stored there. All blocks are made from 512-byte sectors although only 488 bytes of user data is stored in the data blocks in the OFS. Do not get the two confused. More info on this later in the series.

FFS: Fast Filing System. A more recent version of OFS. The main difference is that 512 bytes of information are stored in most data blocks and the blocks are usually contiguous on the disk – not spread around as is typical in the earlier system. The advantage is mainly speed and the slightly more efficient use of available store. Data redundancy suffers badly as a result. A damaged FFS disk is inherently more difficult to recover than one formatted using OFS.

Key: DISKDOCTOR's name for a block. May be used to indicate that the DISKDOCTOR is not sure what type of block is being scanned. Also, something used to open locks.

OFS: Old Filing System. The original system used by AmigaDOS to store information on disks. Slow and cranky, its best feature is a high degree of data redundancy characterised typically by the way DISKDOCTOR can salvage disks.

root track so DISKDOCTOR is going to reformat it. The disk will be renamed Lazarus, demonstrating its author's curious sense of humour.

- **Unexpected end of file**

One of the files scanned turned out to be shorter than it should have been, caused by a length error in the file's header block.

This is likely to be the result of a virus or, as is often the case, of a user's meddling.

- **Unknown device <name>**

You have supplied a device <name> which is not attached to the system. Probably caused by a typo. Check you have named the device correctly.

- **Warning: File <name> contains unreadable data**

A block or blocks belonging to <name> are on tracks affected by an error on the disk.

This is fatal in most cases. Data files can usually be partially recovered when affected like this.

- **Warning: Loop detected at file <name>**

Some block pointers in <name> have become circular. This means the parent block (for instance) points to the child and the child points straight back at its parent.An attempt to read the file would result in the disk head continually thrashing back and forth between the two.

The probable cause is infection of the disk by a virus, or just plain old meddling.

- **<name> is not a device**

DISKDOCTOR recognises <name> but reckons it isn't a device.

Post-scription

Next month (unless you demand otherwise) I'll be looking at the startup-sequence in detail. Until then, take two aspirin, go to bed and call me in the morning. AS

AmigaDOS Masterclass

DISKDOCTOR cannot normally be run in the background, but there is more than one way to skin a command. This solution uses two techniques: an alias and a script.

The script will do the work of running DISKDOCTOR and the alias will run the script. I'll show why in a moment. First though, the new commands:

Add this line to the Shell-startup script (using ED S:Shell-startup).

```
ALIAS DOCTOR NEWCLI WINDOW CON:0/3/500/100/DiskDoc
FROM S:DiskDoc
```

and now create the DiskDoc script (using ED S:DiskDoc) – don't enter the line numbers as these are for reference.

```
1  FAILAT 21
2  DISKDOCTOR df0:
3  IF fail
4    ASK "A serious error occurred! Press Return to exit"
5  ENDCLI
6  ENDIF
7  ASK "Press Return to exit"
8  ENDCLI
```

When you have defined these, just close the Shell and re-open it to ensure the alias is defined and type DOCTOR to get started.

The alias breaks down like this:
ALIAS: the command
DOCTOR: the name of the alias

And the clever bit:

```
NEWCLI WINDOW CON:0/3/500/100/DiskDoc FROM S:DiskDoc
```

This command performs several functions at once:

- **It opens a new CLI independent of the current Shell so DISKDOCTOR can be run from here.**

- **It defines a new window for the CLI. In practice this is tucked away in the top left of the screen with enough room for most messages to be displayed. The idea is to stop it getting in the way, but you can position it to your own liking.**

For the sake of beginners only, here's a brief explanation of what it means:
WINDOW Device: X/Y/Width/Height/Name
Device: CON: or NEWCON:
X: X position. Range 0 to 639 (Topaz 80)
Y: Y position. Range 0 to 255 (PAL) or 0 to 199 (NTSC)
Width: The width of the window in pixels – practical range 50 to 639
Height: The height of the window in pixels – practical range 50 to 255

- **It starts DISKDOCTOR. The command is run from the script explained below using the FROM argument.**

The DiskDoc script breaks down as follows:

1 Raises the failure level to 21 – beyond anything generated by AmigaDOS commands. In other words, this script cannot be stopped by any errors.

2 Executes DISKDOCTOR and starts processing drive 0 – you can change this to any drive you require. This script cannot take parameters because it is executed specially from the alias.

3 Checks if DISKDOCTOR generated a serious error. (For instance, if there is no disk in the target drive – df0: in this case.) Normally the script would grind to a halt at this point and leave you at the CLI prompt, but this has already been prevented at line 1. Since we have turned normal error handling off, we must deal with this, and that's what this does. If DISKDOCTOR exits normally, control skips to line 6, if not it passes to 4 ...

4 ... where the error message is printed. Note: the ASK command is used here. It prints the error message and waits for the user to react, giving him or her time to study what has happened.

5 This line shuts the CLI down and closes its window. This is the reason for pausing at line 4 – if an error had occurred you might not get to see it.

6 Terminates the IF...ENDIF construct opened at 3. This is used as a marker by the IF command but it must be present for the script to handle errors correctly. Control only gets here if DISKDOCTOR terminates normally.

7 This behaves like line 4, giving the user the chance to react to any warnings or messages generated by DISKDOCTOR before the CLI window is finally closed ...

8 ... here.

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The harder they comm



> "Getting into comms is a great way to turn computing into a sociable hobby. But you won't get very far without a modem, so let's have a look at what is on offer..."
>
> **Cliff Ramshaw**

Cliff Ramshaw gets the phone lines buzzing as he reviews a pot-pourri of comms hardware

BEGINNERS START HERE

I hear people yattering on about comms, so what's it all about?

Of all the diverse areas of computing, comms is probably the one most fraught with jargon. Its confusing terms can frighten even those who are otherwise computer literate.

The basics of it are really very straightforward. The goal is to get one computer to talk to another over a telephone line. Because phones are built for people, and therefore expect voices, and whereas computers speak with ones and zeros, something is needed to interface the two. This is where modems come in. What a modem does is convert the computer's digital information into an analogue signal that the phone line can handle. Then a modem at the other end converts the signal back into computer speak.

Isn't there some sort of code needed for modems to talk to each other?

All sorts of protocols – codes used for transmitting data – have developed over the years, and this is usually where confusion arises. Protocols deal with things like the speed of transmission and whether error correction and data compression are to be used. Modems can be instructed manually to use certain protocols. This is done using what is known

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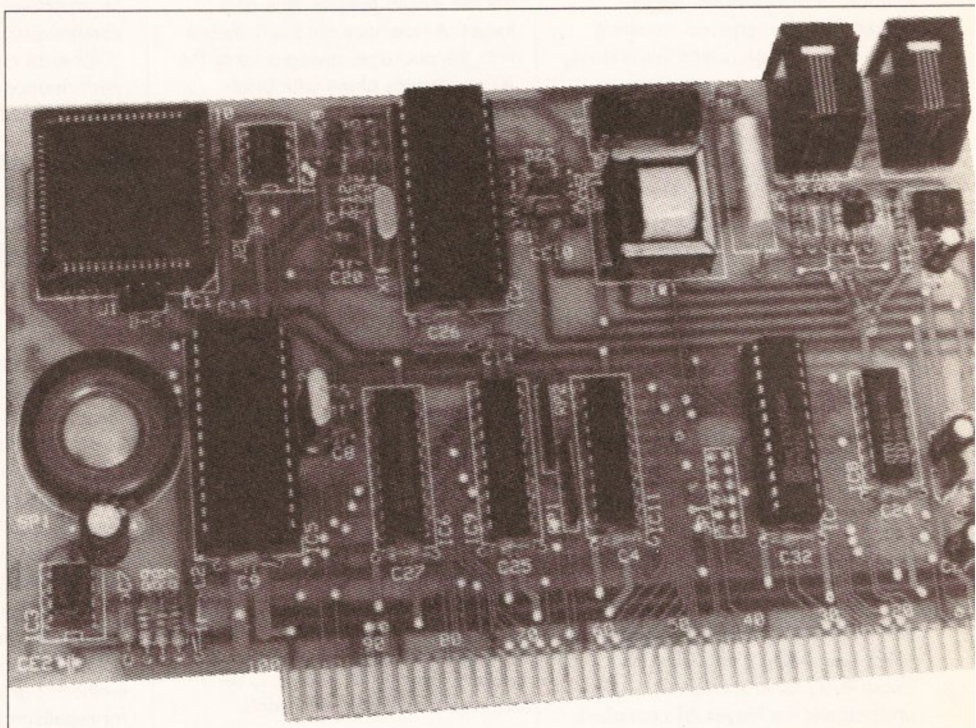
SUPRAMODEM 2400ZI

The 2400zi is one of many modems manufactured by Supra. The zi part of the name denotes it is an internal model, designed for fitting to an Amiga 2000. An functionally equivalent external model is available for an extra £30 and will work with any computer (including an A500) by connecting to the serial port. Like most external models, the 2400 has a row of LED status indicators and to simulate this the 2400zi is supplied with a program that opens a window on your monitor in which these indicators are displayed.

The modem itself is a half-size card which fits into any of the 2000's expansion slots. It is a well-designed board and installation is easy, aside from the nagging doubt that you are applying too much pressure pushing it into the expansion slot.

A metal bracket to be fitted at the back of the Amiga is supplied. This is connected to the modem card by an American-style telephone lead. The bracket itself has two external jacks: one for connecting to the telephone socket in the wall; the other for the connection of a telephone in case it and the modem have to share the same line. However, as the jacks on the bracket are American, British Telecom telephone plugs will not fit them, thus the modem will not connect either. Suitable conversion leads can be bought for under £10 to solve this problem, but most distributors of the SupraModem in this country should supply it with the correct lead. Make sure you check before you buy.

One further word of warning: the modem is not BABT approved, so using it is not, strictly speaking, legal. It was explained to me that the reason for this is that Supra, quite sensibly, is not prepared to go to the expense of gaining approval for a standard which is likely to be obsolete by 1992.



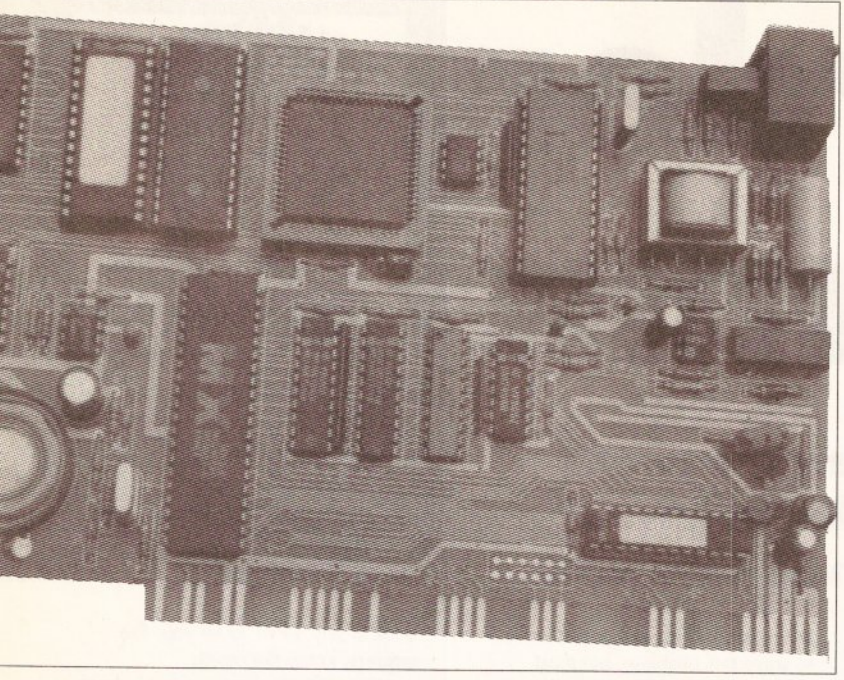
Could Supra's 2400zi modem provide all you A2000 owners with a cost-effective means of getting into comms at the basement level? Read on.

Baud on the 4th July

So, using my handy time machine, I zapped along to 1992 to test the modem out, and now find myself back in July 1991 to let you, the readers, know the results.

Once the Amiga's casing is back in place, the next step is to install the software. A disk comes with the package and automates most of the process. Clicking on an icon installs the modem device driver in the devs: directory of the relevant system disk. The next step depends on the communications software to be used. Most packages try to access modems through the serial.device driver. Because Supra's modems use their own driver, a program is supplied that will modify the comms package. All it does is search through the comms program and change any references to serial.device into

continued on page 90



More features, a higher price and a sticker on the box saying 'Plus' reflect the more weighty specification of the Supra 2400zi Plus.

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references to Supra's own driver.

It is actually possible to install up to five Supra modems in the same A2000. If this is required, say for running a bulletin board, a small amount of device driver jiggery-pokery may be required – nothing too heavy, though. Once this is done, the modem is ready to use with a comms program of some description.

Beyond the fact that it works, there is not a lot more to be said about the thing. It will operate at 300, 1,200 and 2,400bps using the V.21, V.22 and V.22bis protocols. These protocols are simply progressively speedier ways of squirting bits of information down the telephone line.

Baud in the USA

The 2400zi can use the American Bell protocols, but that is not really important to those of us this side of the Atlantic.

It can also store a telephone number and a user-defined configuration in non-volatile memory (so that it won't forget favourite set-up when you switch it off). Like just about every other modem, it understands the Hayes AT command set. This is a an awfully complicated way of telling the modem to dial a number, choose a transmission rate and so forth. The commands are generally between one and three characters long, making much use of non alpha-numeric symbols such as '%'. For this reason they can be very difficult to remember. Most comms software on the Amiga will do this sort of thing for you by means of menus, thank goodness.

The modem is well documented: installation of hardware and software is described very clearly. Baud rates, AT commands, the creation of custom configurations and other such otherwise confusing modem topics are explained. There is also a section on trouble shooting, in case any trouble should present itself as a target. A reference card is included with the package, giving a list of the AT commands along with brief descriptions of each – useful for those times when menus just aren't enough.

All in all, the Supra 2400zi is a useful and solid piece of equipment and should be ideal for small-scale comms use.

CHECKOUT
SupraModem 2400zi

Documentation.......18/25
The process of fitting the device is very clearly described, as is its use. It would have been nice to have a little more information for the inquisitive. The inclusion of an AT reference card is a nice idea.

Installation...............9/15
Straightforward enough for those unafraid of taking off the Amiga's lid, but a bit of a pain having to modify your communications software, especially if you want to use it with a standard modem afterwards.

Facilities.................12/30
Nothing to write home about, but it certainly does the job.

Price value.............25/30
Very reasonable.

AMIGA SHOPPER 64/100

Not a bad piece of kit for getting started in comms. Part exchange deals are available to those wanting to upgrade to the 2400zi Plus model.

SupraModem 2400zi Plus

Looking very much like the 2400zi model, the 2400zi Plus is installed in exactly the same way as its little brother. This goes for software as well as hardware. The modem offers all of the 2400zi's features and more (which is why it has a 'Plus' at the end of its name). Instead of one, it can remember four telephone numbers, but the most important features are the addition of data compression and error correction. Unfortunately, for those already confused by modem terminology, these come in two distinct forms.

The first is something called MNP, which stands for Microcom Networking Protocol. Microcom originally came up with the system, and it is now a widespread standard among modem manufacturers. MNP works on a number of levels, the common ones being level 4, which deals with error correction, and level 5 which handles data compression.

The 2400zi Plus also understands V.42 and V.42bis. These are protocols recommended by CCITT (Comité Consultatif International Telephonique et Telegraphique). V.42 is a error correction technique, into which MNP 4 has been incorporated. V.42bis is a data compression protocol which includes V.42 error correction as a subset. Its performance is typically one-and-a-half times better than that of MNP 5.

Comming clean

Error correction is very useful for transmission across noisy phone lines, especially at high transfer rates. It works by dividing the data into chunks. A mathematical operation is performed on the data of each of the chunks, resulting in a single number, called a checksum, which is sent with the chunk. At the receiving end, the same operation is performed on the chunk. If the result is different from the received checksum, then an error has occurred and the receiver asks the transmitter to send the offending data chunk again.

Data compression saves time and money, as files can be shortened before transmission. Statistical methods are used to analyse the data for repetition of characters and strings of characters.

A similar technique is used by Electronic Arts' *Deluxe Paint* art package to store pictures. V.42bis and MNP 5 compression are both performed by hardware, whereas archivers such as *lharc* or *Zoo* (commonly used to compress files before transmission) compress data by software. If MNP 5 is used to transmit an already compressed file, there will be no further compression.

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as the AT command set, developed by a modem manufacturer called Hayes. As modems have grown more and more sophisticated, the command set has grown too, both in terms of sophistication and complexity.

This is not so much of a problem as it seems because most modems are clever enough to sort out among themselves which protocols they want to use when talking to each other.

So I've got a modem. What happens now?

Having got a one, it's a simple matter of getting hold of some free comms software from one of the PD libraries, then you're away. You can send stuff to your friends in far away places, or join one of the increasingly popular bulletin board systems. These are usually free and provide a means of meeting and talking to new people. They also have a certain amount of PD software which you can drag down the phone line to your own computer. If you're a programmer, you can put your software on to the bulletin board. Then, subject to approval from the SysOp (the warm-hearted person who runs the bulletin board), it will be there for others to access. Fame!

Which bulletin board should I start with?

Try the Compunet Information eXchange (CIX on 081390 1244). You have to pay a small fee to join, but it is one of the largest BBSs in the country. Something you might like to try is using a system called a conference, by which users can get together and discuss topics of interest to them, exchanging news and views.

***Amiga Shopper* has its own conference on CIX. You can use it to send us letters, make complaints (perish the thought), download files or get general information. The account is called amigashopper.**

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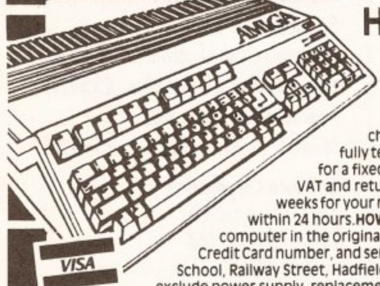
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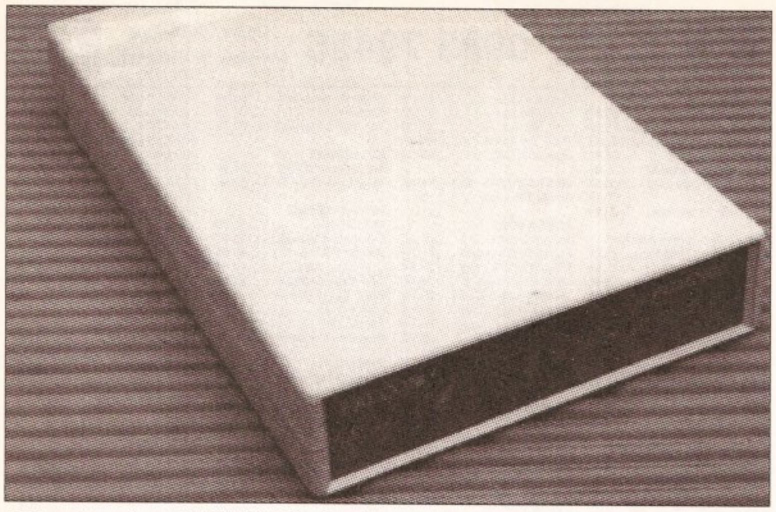
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Falcom's external FCM2400 looks the part and does the biz, but at a price

continued from page 90

There may even be a reduction in transmission speed. On the other hand, V.42bis allows for this and will switch off compression so long as it detects an already compressed file.

With the 2400zi, only a direct connection is possible. This means that the computer sends information to the modem at the same rate as the modem sends the information down the phone line (known as the connection rate). But if you are sending compressed data, the rate at which this data is transmitted will effectively be higher than the connection rate. The 2400zi Plus allows for this by means of 'flow control'. Using this, the computer can send data to the modem at a different rate (preferably faster) than the transmission rate down the phone line, allowing full use to be made of the speed advantage of data compression. Connections using flow control are termed 'normal' and 'reliable' connections.

Decisions decisions

It is possible to tell the modem which type of connection you require. If you ask for a normal connection, the modem will attempt to make a connection at 2,400bps. Asking for a reliable connection means that the modem will first attempt to connect using V.42bis data compression and error correction. If this fails (it will only work if the receiving modem supports this protocol), it will fall back to V.42 error correction, and if this doesn't work, it will then try an MNP connection. If nothing works, the modem will hang up. Instead, you might want to ask for an auto-reliable connection – one that will attempt to connect in the same way as a reliable connection – but, if all options fail, it will revert to a 2,400bps normal connection.

Because of such options, the manual that comes with the 2400zi plus is substantially thicker than that of the 2400zi. The given explanation of the extra features is adequate, but not exactly enlightening as to what is actually going on. The figures quoted for improvements in transmission speed due to data compression are also somewhat misleading. The manual states that the maximum increase in throughput is from 2,400 to 9,600bps using V.42bis. Research by British Telecom produces an average throughput improvement of 2,400 to 6,997bps. To be fair to Supra, just about every modem manufacturer quotes such 'perfect' speed improvements for data compression. In reality, the improvement depends on the type of file being transmitted – some files compress better than others – and noise on the phone line, which determines how many chunks of data have to be re-transmitted. Having said this, the additions of data compression and error correction give a big improvement in speed.

The SupraModem 2400zi plus is a powerful, affordable modem that should satisfy comms' connoisseurs and beginners alike, provided they don't mind using equipment that has not been BABT approved.

CHECKOUT
SUPRAMODEM 2400ZI PLUS

Documentation.......20/25
Marginally better than that supplied with the 2400zi. Explanations of error correction and data compression are also included.

Installation..............9/15
Exactly the same as the 2400zi.

Facilities.................21/30
A good, medium-range set of features. Should help to reduce the phone bills.

Price value............26/30
One of the cheapest modems available with this specification.

AMIGA SHOPPER 76/100

If you don't mind the lack of approval from BABT, it's a winner.

FALCOM FCM2400

You could not find a modem that looked more like a modem ought to than the Falcom. With its long, slim, cream-coloured case and row of LEDs across the front, it could not look more ordinary.

It is an external modem, which means that it will work with any Amiga simply by connecting to the serial port and plugging the included telephone lead into a wall socket. And that's it – no software installation (the standard serial.device driver is used), messing about with screws or anything. It even comes supplied with a mains plug.

The package does include software – a comms program written for the PC. This isn't much use to us, of course, but neither is it much of a problem, given the profusion of Amiga PD comms programs. Very few modems seem to be supplied with their own software.

Feature sum check

The features of this modem are very similar to those of the SupraModem 2400zi plus. It will store a phone number and up to four user-definable configurations in non-volatile memory. It has flow control, so that the transmission/reception speed of the computer can be faster than that of the modem, thus making use full use of the advantages of data-compression and error correction. It supports V.21 (300bps), V.22 (1,200bps) and V.22bis (2,400bps), as well as the American Bell protocols.

V.23 is also supported, although it is rarely used these days. It allows a transmission rate of 75bps and reception at 1,200bps (or vice versa) and is used mainly for viewdata systems in which the exchange of information is largely one-way. The modem also has MNP error correction and data compression up to level 5, as well as V.42 error correction and V.42bis data compression.

The default setting of the Falcom is such that the device will try an auto-reliable connection, falling back to progressively less desirable connection types if need be. As with the Supra Plus, all of these settings can be changed via the Hayes AT commands. In addition, the Falcom understands another command set known as V.25bis. This is a set of commands ratified by CCITT and used for automatic calling and/or answering systems. Despite their popularity with CCITT, they have yet to be widely adopted by the majority of those manufacturing modems for the home computing fraternity.

The manual is a good deal more terse than those for the Supra models. After a quick paragraph describing what a modem is, another detailing transmission speeds and finally a tiny bit about error checking and data compression, the reader is left with a long and horrifyingly complex list of AT commands.

This lack of documentation may leave the beginner confused, but on the other hand the Falcom is simplicity itself to install, and the default settings needn't be changed for standard use. It is also BABT approved, and so has a certain edge over the Supra for those law-abiding users in Amiga-land. However, it seems that legality comes at quite a price. The Falcom costs twice the price of the external Supra Plus, for almost the same functionality. AS

CHECKOUT
FALCOM FCM2400

Documentation.........8/25
Woefully inadequate.

Installation............14/15
Wonderfully simple.

Facilities................25/30
Good, with a slightly higher specification than the 2400zi Plus.

Price value............14/30
You certainly have to shell out a fair bit for the BABT badge.

AMIGA SHOPPER 61/100

Another nice, if expensive modem.

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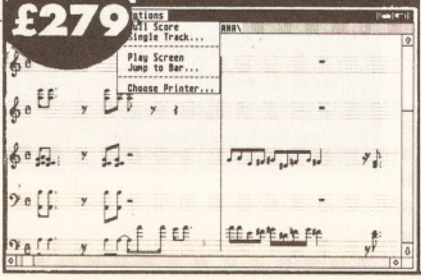
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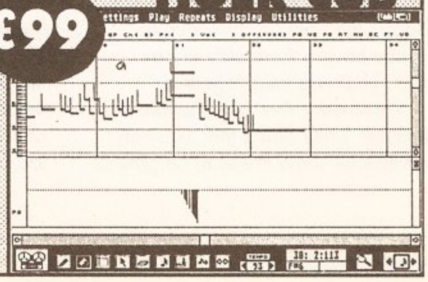
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"From 1985, Steinberg's *Pro 24* was the most popular piece of sequencing software in the music world. Now re-worked and stuffed full of advanced features, it is available on the Amiga and I'm here to see if it *really* performs."

Jon Bates

Pro test & survive?

Jon Bates investigates the latest compositional capabilities of Steinberg's recently re-worked sequencing package, Pro 24

On booting up this 1.1 version of Steinberg's biggest Amiga venture to date, the screen assumes the familiar broad outline of *Pro 24*. The tracks are laid out from left to right across the upper half of the screen; transport controls and locator points are in the lower half (along with many new icons). The prime difference visually is that the MIDI activity meters/bar graphs are now centered under their tracks.

Overall song construction remains the same. Each track is sub-divided into patterns of any length, which correspond to the various recorded 'takes' you make on each track. These can be played back in two ways. The first is in the manner of a 24-track machine: each track plays back exactly what is recorded on it and up to 24 tracks can be played back at once. The other way is to go into a sequencer mode and address the patterns individually, thereby having them play in any order, chaining them together.

/However, *Pro 24* is flexible because, while doing this, you can still allocate some tracks to be played from start to finish, thus having continuous overdubs and lines running through the whole piece. That's the overview; let's look at the various departments in more detail.

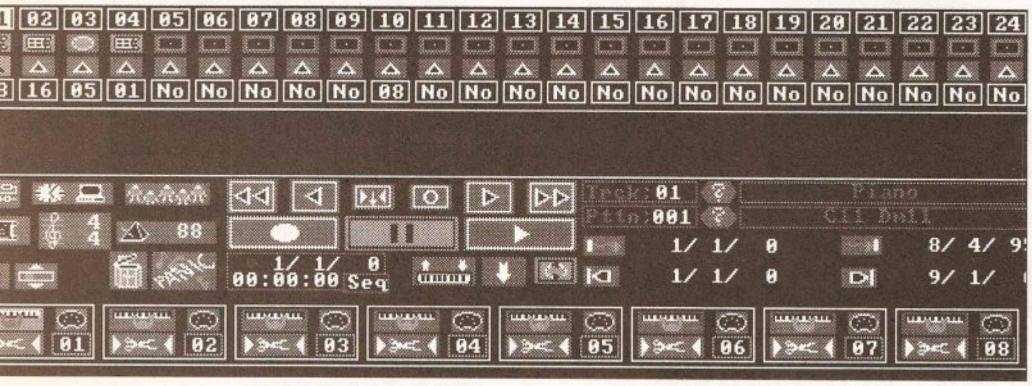
Chunky function

The basic functions are very easy to use. Select a track, set the MIDI channel and hit the nice chunky record icon. It defaults to a two-bar count-in and after this, off you go. The count-in can be altered from the metronome menu, which has all the alternatives imaginable.

Any section recorded is assumed to be the length of the pattern within the track. Obviously, this can be amended afterwards – a situation that is nearly always the case. Each pattern and track is best named straight away, otherwise you get more than a little lost. In practise, the easiest way to record patterns is to record one section. When you are happy with this, the locator points can be set to pick up from the end of the section and put it into punch-in record, with the right hand locator set at a suitable distance to allow for a last minute re-think. Once this is finished you cut it on top of the end of the first pattern.

This seems to be the easiest way of working within one track. You can always copy tracks and patterns to anywhere you like. However, it is not immediately clear from the screen which figures are the locator points and which are the limits of the pattern you are currently working on as they are positioned one above another without labels.

Among the first things to cope with are the three modes of using the mouse. They all actually do the same thing, but presumably they are there to give you a preferred way of working. These are set from the main screen although, since I suspect that once set you would hardly need to change them, they could have been stuck on an options menu out of the way. Mode one is 'drag' mode: the numeral appears in a box and can be altered by either horizontal or vertical movements. Mode two is 'key' mode: the left button increases or decreases a value aided by the simultaneous use of [Alt], [Ctrl] and [Shift]. Button mode allows the right hand button to decide increase or decrease and speed and the left clicks on the number.



The detailed main screen of *Pro 24*. The tracks are in the top half of the screen and the controls below. The gap in the middle is where you will see the bar graphs for each track.

Strange mode

Although quite ingenious, it may well have been more straightforward to offer two from within a menu. It is not helped by the misplacing of the illustrations in the manual. One

BEGINNERS START HERE

What is MIDI?

MIDI is an acronym for Music Instrument Digital Interface.

Yeah, I know that, but what does it do exactly?

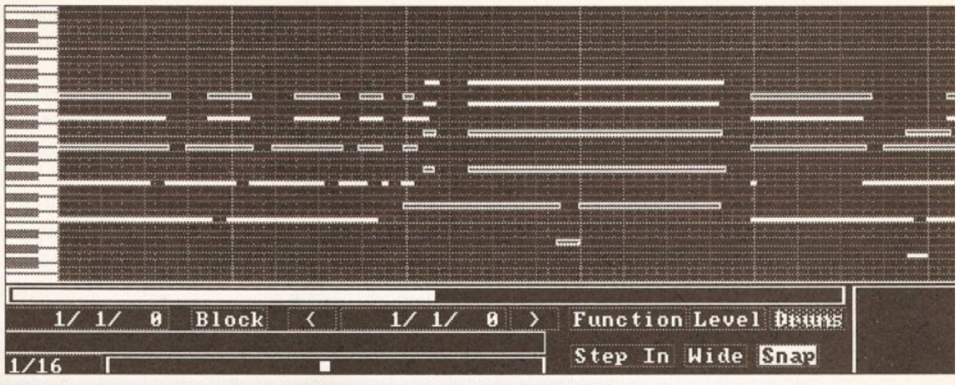
MIDI provides a way for music computers (keyboard synths, modules, the Amiga with a MIDI interface, etc) to communicate. A key press, shift of the modulation wheel or even a patch change on your synth can be transmitted to another, so you can use one keyboard to control a whole host of instruments.

So how do I use MIDI with a music sequencer like* Pro 24*?

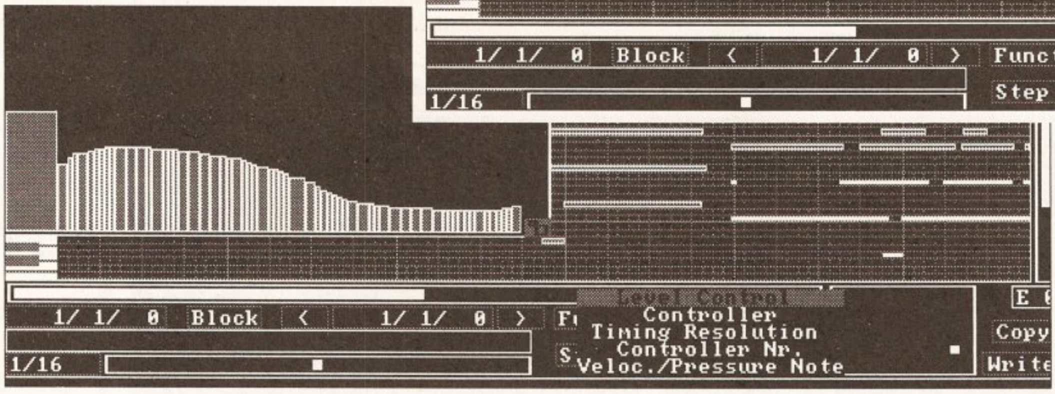
You'll need a MIDI interface (from about £20) which will enable you to attach your synths to the Amiga. Sequencers record anything you play on your music keyboard, such as key presses and so on, and play that data back to the original, or another MIDI-equipped synth. So, once you've recorded your ivory-tinkling efforts, you can then manipulate the data within the sequencer – rather like a word processor, but with note length, pitch, tempo, etc, instead of words. Then, at the press of a mouse button, the data can be re-transmitted to any synth fitted with MIDI. Of course, you can transmit to several synths simultaneously and build up a whole musical ensemble in the privacy of your home.

problem with some settings, such as tempo change, is that you can't hear the result of the change until you release the mouse button.

Playing back in ordinary (Tape) mode is easy as you merely hit playback. You can mute any tracks or solo a track – the solo button is not on the actual channels but another of the lower screen icons.



The grid editing screen (right). Although very well thought out visually, you can't actually hear anything while you're editing with it and the screen doesn't scroll when the music plays.



A smart piece of design (left). The overlay on the left is the level control for one note and the menu at the bottom determines what you are altering graphically.

In Sequencer mode, it is best to have all of, say, the rhythm tracks, like drums, bass and keyboards, set to the same lengths. If you do this then the arrange page works very well. How it works is that you can only take the patterns from one track as reference points, and it is these lengths that the program arranges from. If you want to alter any of them, you can't. The only way around this is to return to the main reference patterns and copy some of them with bars cut or to insert addition patterns, which seems a bit inflexible. There is no way of visually following the arrangement either. In fact, if you start the pattern running and go to the arrangement page, the sound stops, although the counter keeps on rolling.

Keep on tracking

Any tracks not selected for sequencing can be used to accompany the ones that are, which provides a flexible way of working. It's a shame Steinberg couldn't have made more use of the Track Survey feature. This menu option displays all the patterns in named blocks, very much in the manner of *Cubase* – Steinberg's top-of-the-range sequencer. Sadly, this page is for information only and is not an active screen (and it doesn't number the tracks on the vertical left hand axis).

The copy, delete and move features are accessed from the menus for each pattern, and there's a neat shortcut that copies the current pattern to any track by clicking on the first pattern locator and dragging it to a track.

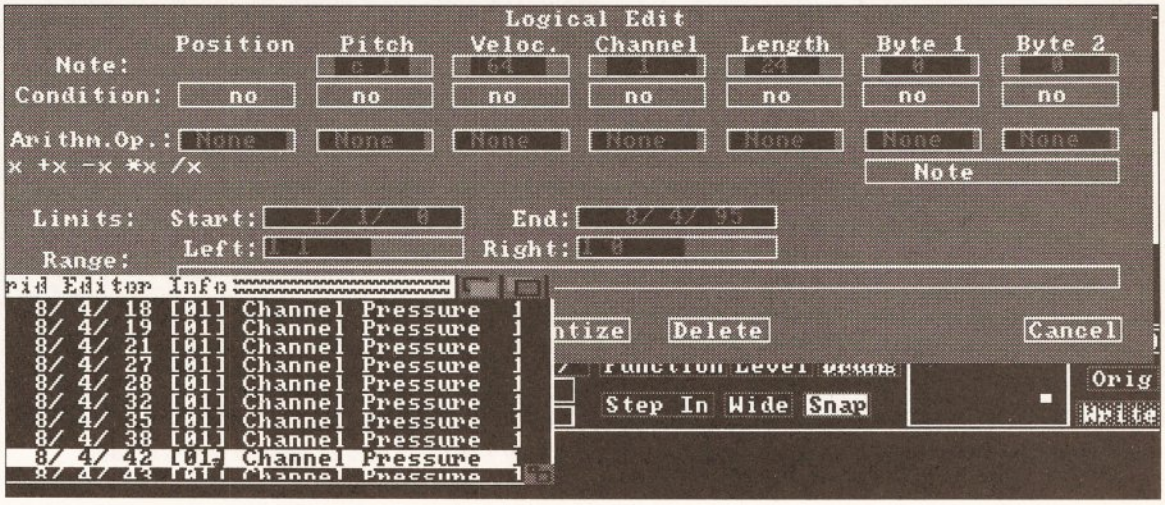
In Cycle Record there are two innovative overdub functions.The first, instead of either mixing with the notes already on the track or replacing them, actually only deletes notes that approximately match up to those input. This means that you can re-do ,say, a drum track without losing important fills and nuances originally present. The second is a totally mind-boggling feature which will actually keep up to 127 different recorded versions of the overdub. It just keeps cycling around and muting the last version. You then have the fun of selecting just exactly which of the 127 overdubs you want to keep. A little over the top, but it certainly would have its uses. It too has some little quirks: you can't activate playback while the window is open, even from the qwerty keys, and changing from overdub to overdub isn't quite so straightforward.

Quantize

There are two types of quantize: fixed data quantize, which alters the track/pattern data permanently, and real-time quantize, correctly termed a 'playback parameter'. The latter is accessed from the question marks to the side of the current track/pattern playing. This has a really worthwhile set of options that can be tried out before leaving the window: velocity delay, echo, transpose, program change, volume, plus all the track details you could want. The quantize options here can be exactly the same as the data altering ones and are selected from within this window. Full marks for an excellent piece of fast and friendly design.

Echo only works on playback and does not affect MIDI data put through to the active tone module channel as you play it, which could be useful as hearing echo all over what you're trying to play might alter the way you hit the notes.

Most of the windows that set peripherals have a handy 'try' option which checks the result of new settings on whatever is playing before you finally set it and return to the main page. However, for many of the the windows, you have to have the track playing first because the main screen area is often inactive when a window is opened.



Many editing options are available within the Edit screen. The arithmetic functions of Logical Edit are overlayed with the event list. You can edit in either window, which is a quick and easy way to work.

Editing

There is a host of ways in which to edit the data; grid display, graphic control, event list editing arithmetic alteration of data and score display. However, unless I did something grossly amiss, there was no chance of hearing anything being edited. This makes editing very difficult and such a feature should not be omitted from a program of this stature. The edit displays do not scroll while the sequencer is running either and, despite *Pro 24*'s many good and excellent points, these two major factors put a lot in the way of the user and the music.
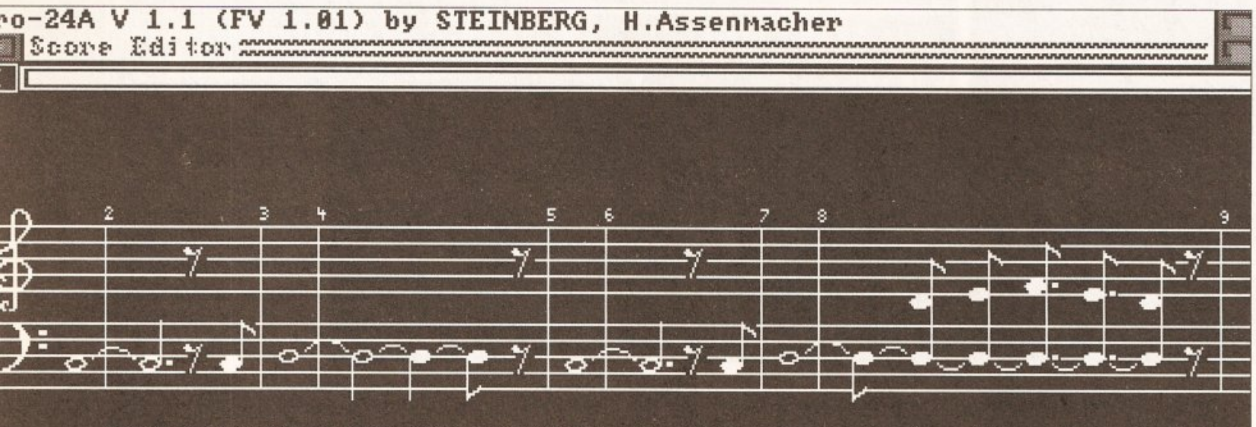
However, the options presented are really special. The most often used will probably be the Grid Editor. Steinberg has come up with a neat way of sizing up the grid against which notes are graphically displayed. A 'zoom' box in one corner shifts the X-Y axis of the grid and is a brilliant way of quickly getting the correct display to change notes rapidly. As with many other departments in this program, there is a safety margin bordering on the paranoid. Any changes you make are taken as a copy and not written to the track unless you specifically

continued on page 96

continued from page 95

say so. This can be overridden, but is an excellent safeguard. Like all the safeguards, they are memory intensive but very worthy features.

To the left of the grid is an upright keyboard to line the pitch of the notes against. However, the cursor also registers pitch as you move it over the grid – another good

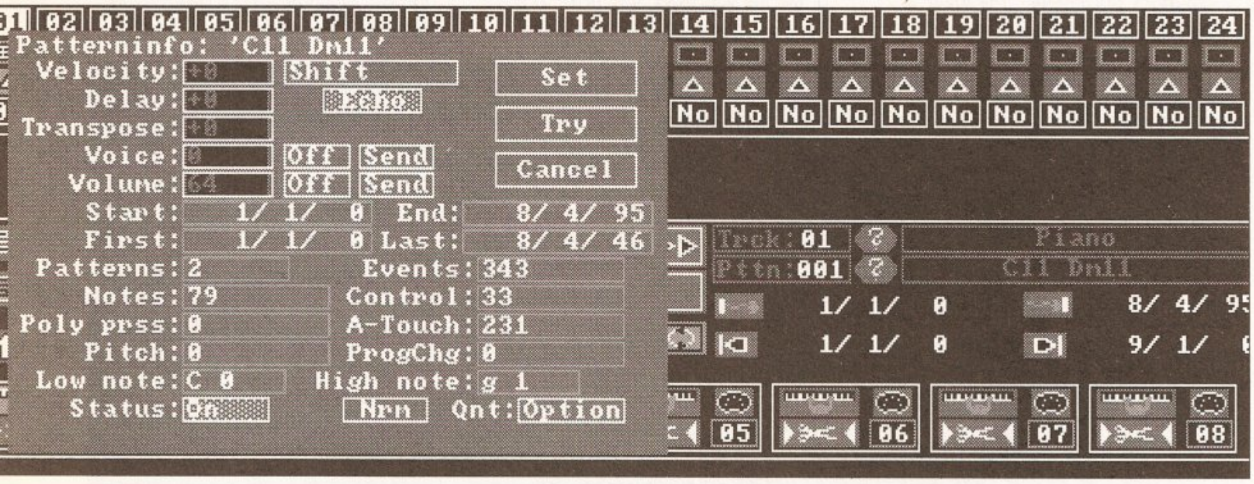


This is one screen you can't edit in. Although it scrolls along happily enough, you can't touch the notes at all.

idea. Notes can be selected and moved, stretched and truncated depending on where you click on it. It only deals with one note at a time and the velocity is altered from a slider at the bottom of the screen.

Notes nibbled

Another nice feature is the 'wide' button which allows the mouse a degree of inaccuracy so that small



Altering pattern parameters is made exceptionally easy and very well taken care of with the above window.

notes can easily be captured. One snag is that once a note has been entered, there seems to be no way way of altering its pitch – even though its precise data can be displayed, the data is unalterable. Once in Grid Edit mode, other patterns can be loaded up without having to return to the main screen

Blocks of notes can be defined and then copied, moved or deleted. Echo effects can be created in this way. Grid Edit can also be used to create new tracks in step time.

Thoughtfully, the program automatically creates a fresh 16-bar pattern if you decide to take this route. By hitting 'I' on the keyboard the Event List editor appears. To input data here for any of it's entries you need to do it directly from the keyboard in the format that is used by the program.

The graphic Level Control allows you to draw in data and can be applied to program change, note velocities, pitch bend, after touch and any of the useful MIDI controllers – probably pan and volume.

It displays each event individually in great detail and is therefore incredibly accurate. It would have been beneficial to have installed a 'zoom' mode here so that you could view a track or pattern in less detail, which would be of far more use for certain controllers.

Drum edit

A variation on the grid editor is applied to drum tracks. A set of drum maps, some of which are included on the disk, are loaded in and these interpret the notes on the track by giving them the correct drum name, which is listed to the left in place of the keyboard. Again, a very neat way, derived from earlier versions of this program, of manipulating the drums. You can of course create your own custom map.

An arithmetic function called Logical Edit can be called in for any pattern or track and will perform specific calculations on any defined fields of data within any preset number of bars. This makes the program extremely powerful as the function can be used to select certain notes, controllers, velocities – in fact anything you like. As long as you are familiar with the way in which MIDI data is listed by a sequencer, it is extremely useful. Again, it can be made reversible by taking a copy of the function. Usefully, the events altered can be automatically quantized up to the current value as well. The manual is particularly helpful on this feature.

Score Display, however, is disappointing. It really only does exactly what it says: scrolling and illuminating the notes that are currently playing on the pattern selected, thereby rendering it a cosmetic feature. A great shame. This could and should have been expanded into an editor or even a score print-out facility.

Pro 24 has a rather ingenious method of routing incoming MIDI data using what are termed 'subtracks'. Across the bottom of the main screen are inputs, each one of which can be set to route incoming data to several tracks and channels at once, or to only accept data from one channel. You can set record modes from here as well. Although extremely useful, I did wonder why one would need eight of them all at once. Why not just have one with different set-ups memorised? This would save cluttering up the screen area, which is already very full. Yes, it works, but perhaps with a little too much enthusiasm.

The package has a clever nesting routine which works with the 'undo' button. You can specify an almost limitless number of steps for the 'undo' button to go back, so if you've screwed up in a big way, you can step back quite a number of operations. The trade-off is that it uses up lots of memory, so only mega RAM owners really get the full protective benefit from it.

It will retrieve and store Systems Exclusive information – those intimate details of sound creation data known only to your synth. The data can be stored for each song in the form of a file which can then be dumped automatically before you start playing back. This saves you searching around for sound disks/programs as the sounds are all there ready and waiting. It can even dump the list out as an ASCII file. This again was a feature of the original program and it is a very useful routine to have. Another

BLITS & BOBS

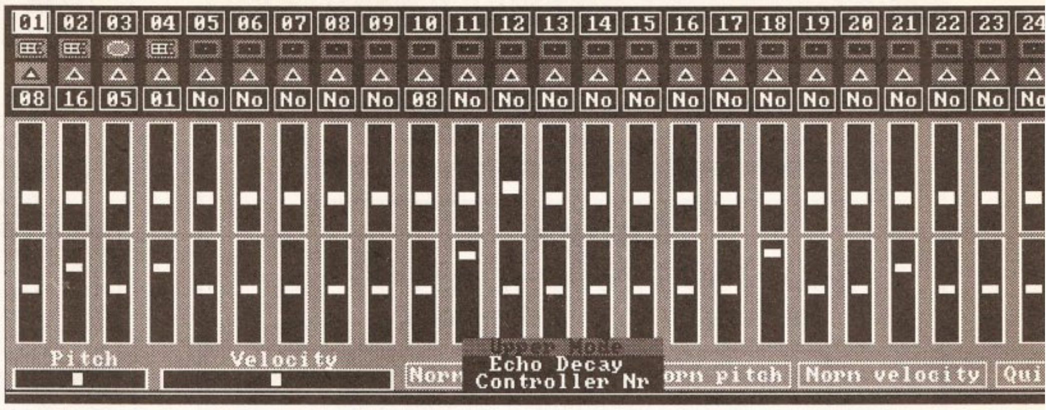
Eagle-eyed Amiga Shopper reader Martin Boycott-Brown spotted a wee gaffe on a musical note in our June issue's Scala review (see p64). "I don't know whether or not there is an opera house called La Scala in Madrid," he writes, "but there is definitely one in Milan." Did we say Madrid? Oh no, whoops, sorry, argh, and sack that damn encyclopaedia. But then Martin should know as he lives in Verona. He also took the trouble to check out the origin of the word: "According to the Penguin Dictionary of Music, the opera house is so named because it was built [in 1788] on the former site of a church, Santa Maria alla Scala." Fancy inviting us over to discuss this further Martin?

favourite facility that has survived is the Mastertrack, used to dictate details of tempo changes and many other global bits of information that govern the performance of a piece.

Mastertrack also records data generated by one of the program's best features, the mixer page. Not content with merely balancing sound levels, *Pro 24* can apply its double set of faders to many other areas – a feature found on other up-market sequencers. The trump card is the ingenious way it is enacted, plus the echo feature which is incorporated in several other sections of the program.

Bucket noises

As well as being able to copy and delay a track to create a single echo feature, there is a full echo feature. When I spotted this, the only version I found applied to all the tracks all of the time which resulted in an enormous and uncontrollable row followed by a MIDI jam of mega proportions. When it is used under the control of the mixer style faders, it's a fabulous tool. You can echo any track with any amount of variable echoes, either diminishing or getting louder, staying the same length apart, speeding up or slowing down. You can even specify the pitch to rise or fall and the transfer of echos to alternative channels. All these functions can be governed by the double mixer faders and applied to each track individually. You can really improve the sound of a piece by the careful use of this feature, but going berserk with it will ensure your synths get constipated very quickly and retire hurt. All the real-time alterations to this and all controllers, pitch bend, velocities and modulations are recorded on to the Master Track. This is an exceptional feature and one that gives very fine control over the music.



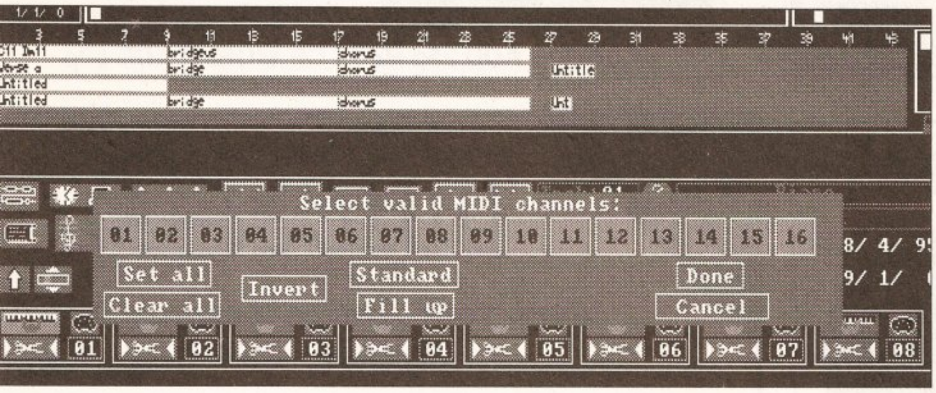
The amazingly versatile mixer screen. The faders line up under the tracks and the functions are picked from menus at the bottom. A real boon of a feature and great to work with.

Communication with the world outside takes several forms. It can synchronize or be synchronized via MIDI and this includes using Midi Time Code (MTC) and SMPTE. It can read and store SMUS/IFF song files, standard MIDI files, as well as its drum sets, Sys Ex files, tracks, patterns, auto set-ups and of course the song itself. There is a far-ranging MIDI set-up page to cover incoming, thru and outgoing data. And many of the functions can be controlled from keys on your instrument according to how you set the 'remote' page up.

Reprise to fade

Pro 24 is a very comprehensive program with many great features. As such, it can cope with a lot of different environments and it's not too hard to get to know, although I suspect you'll be taking some time plumbing its considerable depths. But with advanced features such as echo control and overdub facilities, how come such simple but vital things as hearing your edits as you do them and scrolling music for error location are missing?

Although basically brilliant and a program that could, with fine tuning, be THE sequencing package for the Amiga bar none, at the moment *Pro24* is a very slick curate's egg. Excellent for the most part, but with the odd sour spot. AS



Two functions are displayed on-screen here. The top one is the non-active track overview while the lower enables you to select the way that MIDI data is directed on input.

Shopping List

***PRO 24* 1.1 ....£291.20**
by **Steinberg**
Eiffestraße 596, D2000, Hamburg 26
Germany ☎ 010 494 021 1594

distributed in the UK by
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The Studio, Church St,
Stonesfield
Oxford OX7 2PS
☎ 0993 898484

Checkout PRO 24 1.1

Documentation 15/20
Well written and comprehensive, but with one or two errors. Easy to follow but needs an index.

Functions 18/20
Very comprehesive array of functions for every possibility, with several ways of solving problems.

Speed.....................17/20
All operations work without any noticeable time lapse.

Ease of use.............13/20
Easy to start with, but some functions take time to find and get used to. Editing is severely marred by the lack of scrolling and monitoring facilities.

Price.......................16/20
Although not exactly cheap, it is nevertheless a professional price for a professional product.

AMIGA SHOPPER 79/100

A few omissions let this fine product down, but it's still a great music machine.

JARGON BUSTING

MIDI: Music Instrument Digital Interface: the universal standard by which digital instruments such as synths and computers can communicate

RAM: Random Access Memory. The amount of space that is available in the computer for data to be stored.

REAL TIME: Data is altered 'as it occurs' rather than when it is residing in the memory of the computer.

MIDI CLOCK: The regular pulses sent via MIDI which ensure that instruments listening will play at the same speed

MIDI TIME CODE: Ensures that as well as playing at the same speed, the instruments will all stop and start from exactly the same place.

SMPTE: Society of Motion Picture and Televison Engineers. A time code standard used in video, film and television industries.

MIDI FILE FORMAT: A standard file format that enables MIDI data to be loaded from one program to another.

SYS EX: The specialised data that is transmitted via MIDI containing information that can only be understood by the make and model of instrument it is addressed to.

QUANTIZE: To round up data, usually meaning the correction of timing errors that occur in performance

VELOCITY DATA: Information transmitted via MIDI that refers to the speed with which a particular note was pressed and thus affects the tone it creates.

PITCH BEND: The ability to vary the pitch up or down of any note by using either a wheel or joystick-type control mounted on the synth, usually to the left of the keyboard

MODULATION: Alters the sound according to the way it has been programmed; usually in the form of a vibrato – the note wavers in pitch and the amount it wavers is controlled by the Modulation control.

PAN: Corresponds to the Balance control on your stereo system – moving the sound from left to right. Midi is able to control this provided that the output from the synth or module is stereo.

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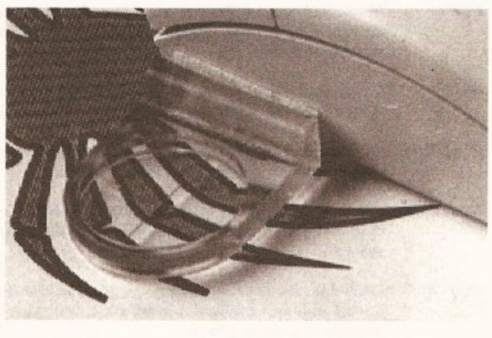
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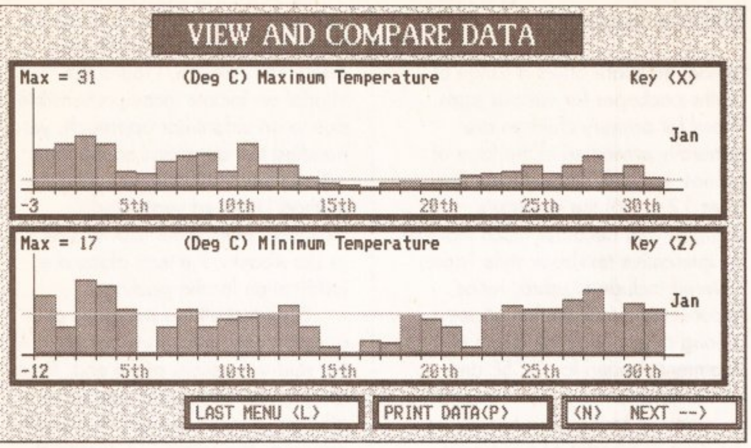
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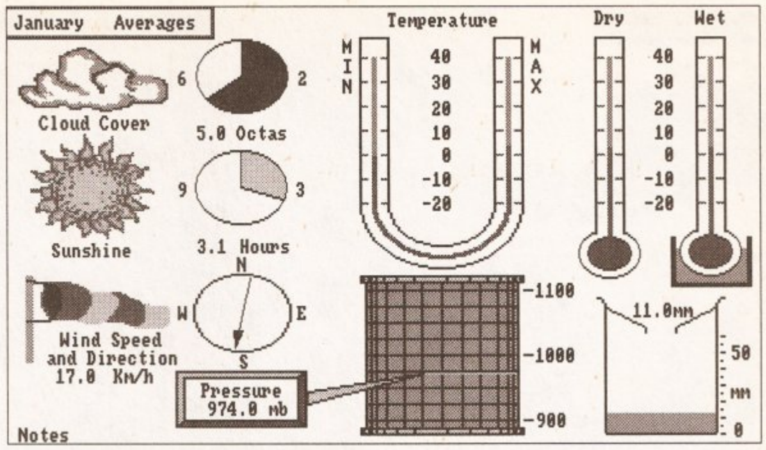
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Weather Watcher **is a 'must-buy' program for all you amateur meteorologists out there. It is ideal for class weather projects.**



The attractive graphical displays ensure that this is not one of those programs which will only be used for a week and then forgotten.

Live and learn

Pat Winstanley rates the performance of a selection of educational programs aimed at older schoolchildren and adults

> **"Computers fascinate kids, but both small and medium-sized sprogs rapidly give up when boredom sets in. Which programs have them coming back for more and which send them running out to play in the rain? If they don't like the game, it won't teach them anything."**
>
> **Pat Winstanley**

By the time kids hit secondary school they are expected to have a good grasp of the fundamentals of English and maths. These skills will be used as basic tools to allow access to other subjects. In contrast to the cross-curricular approach of primary education, senior schools treat topics in a much more differentiated way,defining each subject by the knowledge needed for GCSE examinations.

Whereas topic-based work in the primary school allows for all interests, the rigid separation of subjects in senior school can alienate kids who are weak or uninterested in a particular area. Thus, many girls 'hate' maths due to stereotyping, and probably 'hate' computing too, since it is also generally seen as a male preserve, so girls allow themselves to be edged out. Your Amiga at home can really come into its own in these situations, as it can be used as a tool with which weak students can tackle difficult subjects in private.

Weather Watcher

The great British preoccupation with weather statistics had another boost the other day with snow in June. Do you remember about 15 years ago when a cricket match was abandoned because 'snow stopped play'? If so, you're probably one of those people who eat statistics for fun and cause riotous arguments down at the local pub. *Weather Watcher* is a program that enables you to record and chart a selection of weather statistics on a daily basis, then draw comparisons across time. It is intended as a tool for the enthusiast or for class project work and, while rather simple, it does its job well. The values which can be entered into the database cover minimum and maximum temperatures, dry and wet bulb temperatures, humidity, air pressure, rainfall, sunshine, cloud cover, and wind speed and direction.

Daily entries are provided for all of these and can be viewed and edited either as figures or as a graphical representation chosen for a visual display of the overall weather day-by-day. There is also space for a single line of text which could be used to record the main event of the day for reference. Only values within the allowed ranges may be entered, with invalid figures highlighted and not accepted.

Having entered some or all of the values in the database, the user is then offered a wide variety of displays to compare different types of data. Using this, patterns and trends can be spotted allowing the interaction between various atmospheric factors to be studied.

Two graphs for each month are shown on-screen, covering one type of value each. Thus daily rainfall could be compared with maximum temperatures, or cloud cover with air pressure. Each of the data types can be combined with any other for comparative purposes. The same can be done with the whole year and shown on-screen. Additionally, the editing screen can be displayed, without editing facilities, in both figure and picture form. Any of the screens can be dumped to a printer simply by clicking on the display, giving the opportunity to compare one year with another. As an added extra, you can create and display your own weather maps.

The loading screen shows a blank map of Great Britain with animated weather symbols, such as clouds dropping rain. It also shows a scrolling text message. All of these aspects are available for the user to manipulate using an art package, either by simply changing the layout of the current map, or by adding new symbols, messages and so on.

The two parts of the program are not integrated, so weather maps must be built up by hand. However, the facilities enable you to create animated displays which have nothing to do with the weather simply by taking advantage of the system and substituting your own ideas.

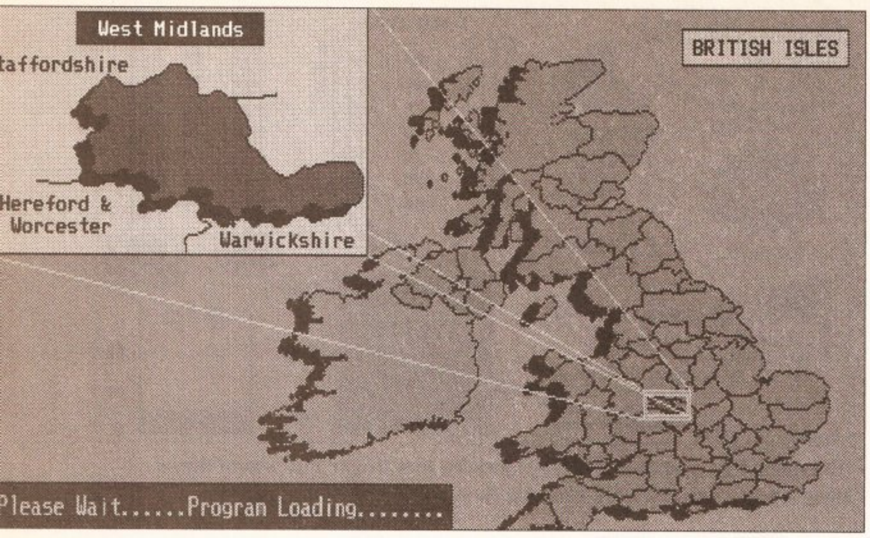
What is it, Where is it?

Learning the positions and names of various counties can be a hard slog, so it's good to see a program that makes the task more of a game than a drilling exercise. The basic screen display shows the British Isles with each county marked as a coloured area on the map. Several options are available, allowing learning, testing or simply playing about, depending on your abilities.

continued on page 100

PC or not PC

Unfortunately the Amiga is definitely the poor relation in many schools, where the PC and Archimedes rule the roost. If you have PC compatibility, there is a wealth of software about, so if you can't wait around for the small proportion of conversions to appear it's well worth thinking about investing in one of the PC emulators available for the Amiga, such as the KCS Powerboard or the ATonce, both of which Mark Smiddy reviewed in *Amiga Shopper*, issues two and three respectively.



What is it, Where is it? **tests the student's knowledge of the counties in Great Britain; both the names and geographic locations are tested.**

continued from page 99

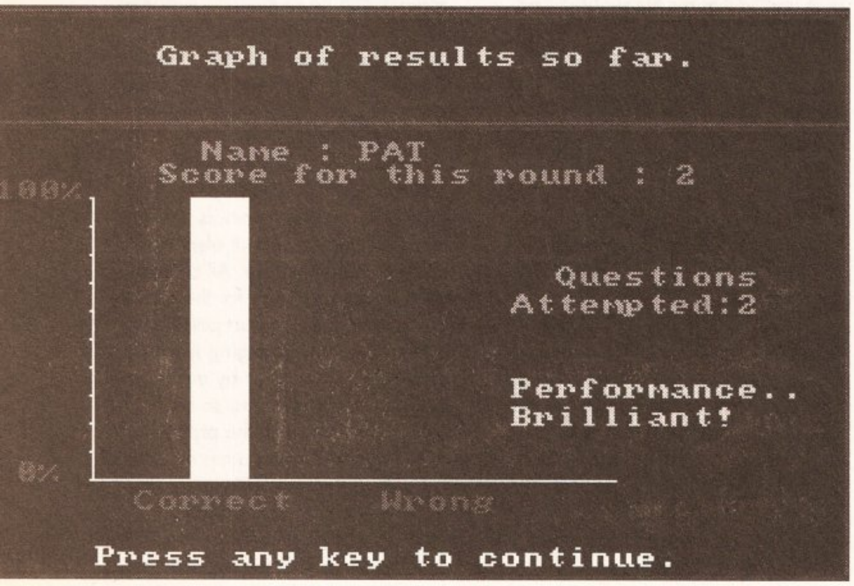
What is it, where is it? presents a map with one county highlighted in flashing red, together with a list of all the county names. The task is to select the correct name by scrolling through the list. For users who want more of a challenge, the list can be dispensed with, leaving you to type the county name.

The package also shows the map and counties but, at the simpler level, provides a county name for you to find and click on with the mouse. On the harder level the computer supplies a county name again, but randomly highlights different county areas in rotation. The task is to click the mouse when the correct area is highlighted and, since the areas change rapidly, a fair bit of reflex speed is required in addition to knowledge. *Jigsaw* also provides two difficulty levels. In the easier game each county shape is simply picked up like a jigsaw piece and slotted into its place in the map.

At the harder level, the task is identical, except that you don't have a map and must work out placements by deciding which counties share borders – not easy. If all that sounds too difficult, two tutors are also available. One will display a county name if you click on the area, while the other will highlight the correct area to match the name which you select with the mouse from a scrollable list of counties.

All the maps are also available as IFF files, and so can be pulled from the disk to use in your own graphical displays.

The package is very flexible and a dream to use – it is certainly suitable for all ages. I can imagine some pretty mean contests developing between older and younger family members as the package is used as a quiz. It's certainly one that has kept me coming back again and again, and each time I use it I learn a little more while having lots of fun.



Better Maths **is one of a range of maths packages from School Software. Its laid-back approach means that it is sure to be a popular choice.**

Better Maths

School Software offers a range of maths packages for various ages. Those for primary children are generally presented in the form of games, but with *Better Maths* (for ages 12 to 16) the emphasis changes and becomes much more of an interactive text-book style.Topics covered include algebra, ratios, factors and quadratic equations among others, with the depth of treatment needed for GCSE and similar exams.

The first section is a tutorial, in the form of a series of text pages going through the basics of a topic. After the concept has been introduced in the first few pages, the texts breaks to ask a question. This approach prevents the student blithely reading the text without having a clue about what's going on. Although the tutorial continues whether or not the student answers correctly, the wrong answers highlight weak areas.Two other sections present multiple choice tests of all the material covered.

The first section presents 'straight' questions, while the second uses practical applications of the topics. Although no substitute for a good text book (the tutorial sections are more for revision and reinforcement), the program will make an excellent revision aid. One problem might be the approach adopted in the tutorials. Unlike straight facts, such as the dates of battles, maths topics can be handled by a variety of different methods. If the method familiar to the 'not sure' student differs from that in the tutorial, some confusion may result. For instance, I found the tutorial on factors incomprehensible due to an unfamiliar approach, yet handled test questions on the topic without much difficulty by using the method I learned years ago. However, even if the tutorial side has its drawbacks, the tests alone are justification for the package.

Each test allows two goes at a question and presents a bar chart of the student's results at the end. There are no time limits, and the student is advised to make use of a text book if required. This unhurried, laid-back approach should appeal to most budding mathematicians who are discovering the delight of solving problems simply for the fun of doing so. I wish the program had been around 20-something years ago when I was struggling with 'O' levels.

French Mistress

The biggest grind about learning a foreign language has to be vocabulary drill, and this is where the Kosmos *Mistress* series scores in its elegant approach to the topic.

Two basic sections make up the package: a tutorial and a test. The system is based around word lists stored on disk, an English word or phrase and its foreign equivalent. In the tutorial section the required list is loaded from disk then shown on screen; the English or foreign word first, followed a few seconds later by its translated equivalent. The display can be set for the computer to scroll

continued on page 102

Covert Gaming

It's well worth looking carefully at the shoot-'em-ups your kids are playing. Now that computers can include both gameplay and strategy without running out of memory, developers are beginning to work more on the 'mind games' aspect in even the simplest blasters.

In both the full-price/budget market and PD/shareware there are many games around which demand a vicious amount of logic, with enough gameplay to camouflage themselves as 'the latest chart-topper'. Aspects to watch for in an educational sense are mapping, logical problems and maths/economics (can I afford to buy the most expensive weapon *and* improve my armour at the same time – what's the trade-off?) Alternatively, moving across the spectrum somewhat, take a look at adventure games. These are used extensively in schools and help to develop reading and spelling skills along with logical thought.

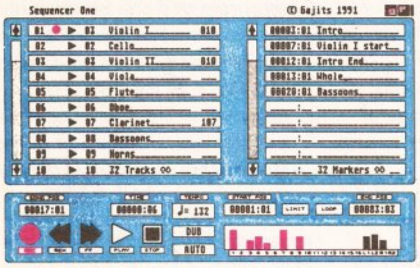
Even straight shoot-'em-ups have their part to play in developing reflexes. Just because a game is in the top 20 doesn't mean it is devoid of educational value. Just look at *Sim City* as a classic example. The thing to watch is the balance between a quick half-hour blast during a break from revision and the all-night, every night compulsive gameplay. Treat computer usage as you would television viewing and you won't go far wrong.

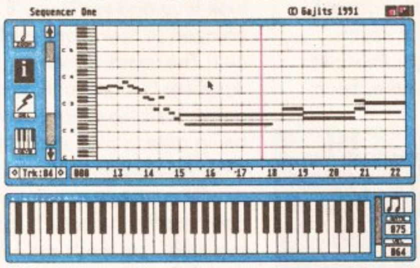
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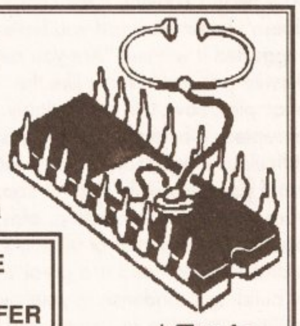
© 1991 Gajits Music Software, 40 Princess Street, Manchester. M1 6DE. Tel: 061–236 2515. Fax: 061–236 4044.

Gajits Music Software produces a whole range of music software products for the Amiga, ST, and soon the PC. Please phone for details.

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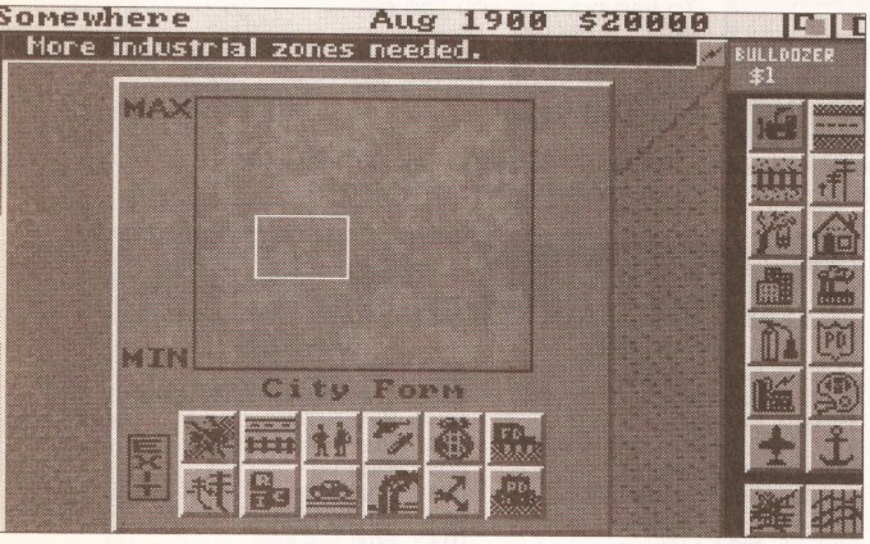
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continued from page 100

through it automatically, with the user selecting the time each translation is on-screen or, for more intense memorisation, the user can simply move on to the next entry when he or she is ready.

Each list is concerned with a particular aspect of life such as The Family, which includes grandparents, widowers, in-laws and so on. In addition to everyday people and objects, the lists also cover such things as verbs (I am, you are, he is and so on) and additional lists can be created or existing ones modified. This would be particularly useful if you have a vocabulary list to learn for homework. Simply key in the words or phrases together with their corresponding translations and you have an interactive tutor/test.



***Sim City*: if you pretend that it's not a game, and consider its educational value, you can soon convince yourself that it's a worthwhile purchase.**

Grown-ups' Answer Back

AS Issue 3 carried a full review of the Kosmos *Answer Back Quiz* series. Don't forget that the 'junior' shell can be used for the 'senior' question list disks too. These supplementary disks are around GCSE level – in other words, hard enough to tax most adults, never mind the kids!

Having drilled to your satisfaction, it is time for the nitty-gritty of the test mode. Here you are presented with a word or phrase from your chosen list and asked for the translation. This can be selected for either direction of translation. As a word or phrase is presented on-screen, your task is to type in the translation. If you haven't a clue (which happened a lot to me), simply pressing the [Help] key forces the program to display the next letter of the word for you. This is not an option to be used lightly as, at the end of the test, your score (including the number of times you have used help) is displayed.

During answer entry, the program will not allow an incorrect letter to be entered – but it counts your mistakes too – aargh! Flexibility is the name of the game here. Each supplied (or created) word list can be shown sequentially or in random order. The number of entries to be taught or tested from a list can be selected, as can any section of the list. Thus you might create a list which contains progressively more difficult spellings or obscure relationships and see how far you can make it before memory lets you down.

The other languages available apart from Frenchare German, Spanish and Italian. With such a choice there's no excuse for not brushing up in time for your annual contemplation of the decor at Heathrow airport.

Scrabble

I've lost count of the number of times people have enviously said to me "I wish I could write, but I don't know the words to use." And my reply to them is – crosswords. Apart from filling in forms, most of us do little writing once we leave school, and so get out of the habit of varying our language. We don't notice when speaking that the same vocabulary crops up again and again – it's only when the words are transcribed onto paper that it becomes obvious.

One way of building a good vocabulary is crosswords, but the best way is to play *Scrabble*. Set a competitive game up with a friend and you'll soon be scanning the dictionary for the weirdest combinations of letters imaginable. Yes, I know that's strictly against the rules, but if you both agree to do it (I wonder if qwzxac is a word – can I look it up and see?) you'll be amazed at how many unlikely words exist.The computer version of *Scrabble* is identical to the board game, with the great advantage of being able to play when there are no other humans around.

Of course, you can also play against other humans if they are available, but that's more fun on a board if you have one. One of the beauties of playing a computer opponent is that you can cheat to your heart's content. If the computer doesn't know the word you have suggested it will ask "Are you sure?". Answer yes, and words like the example above will be trustingly accepted. Obviously, cheating is ridiculous if you really want to learn, but if you feel a little bashful about your vocabulary or spelling, playing against the computer at all hours with a dictionary to hand is a great way of building confidence in your own abilities, learning as you go and having lots of fun while you do it. It's much easier to power the computer down when it plonks an eight-letter word on two triple-word-squares than it is to kick your friend out when he/she does the same.

Sim City

Although billed as a game (which, of course, this magazine has nothing whatsoever to do with) *Sim City* is actually an excellent exercise in the reality of town planning, politics and logistics.Teenagers tend to be unaware of the bills paid by their parents and often have a rude awakening when they leave home. "Hey Mum – what's Poll Tax, and why has my electricity been cut off?"

If your kids are likely to have you bailing them out, then this is just the program to teach them a little about responsible adulthood. *Sim City* has you acting as a Mayor. In order to avoid being kicked out of office you must keep the plebs happy, which involves zoning residential, commercial and industrial areas and setting the most efficient tax rate.

The whole experience is a matter of balancing human and financial resources and can be fascinating to adults and teenagers alike. This game recently received an award for Simulation of the Year – and deserved it. From an educational point of view it is the sort of program that teaches by experiencing fun – the best way of all. AS

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***Sim City*..............................£25.53**
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Sim City is also available for **£29.99** bundled together with **Populous** – a great strategy game with its own high educational value.

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Better Maths	20	24	5	15	64/100
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Scrabble	20	20	5	20	65/100
Sim City	15	22	5	25	67/100

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Superbase goes fourth

In the first of a two-part review, Mark Smiddy examines the data handling capabilities of Precision Software's recently upgraded Superbase Professional



"A cost effective and easy-to-use database is an essential part of any efficient business. How does Precision's _Superbase_ 4 live up to such demanding requirements? Let's find out."
Mark Smiddy

BEGINNERS START HERE

What is a database?

Very simply, a database is a program used to store, retrieve and arrange information. Databases find homes almost everywhere – typical examples of home applications include catalogues of record collections, recipe books and telephone address books. Nevertheless, I have yet to meet anyone who actually uses a database to keep track of their record collection or favourite gourmet meals.

In the office databases really come into their own. They are used to keep track of stock, employees' pay, holidays, customers, invoices, accounts and so on. The list is almost endless. In fact many applications, conventionally thought of as requiring customised software, can be created with powerful, programmable databases such as _Superbase Professional_ 4, the subject of this review.

I've seen many different databases. How do they work?

Databases primarily come in two flavours: the older, flat file design and the newer, more powerful and complex relational type. Also, relational databases are more expensive and rarer because they are inherently more complex to program. First though, a closer look at how flat file systems work and what they are used for. Such systems were the first to appear because they were closer to the real world of

continued on page 106

There is little doubt that *Superbase* has come a long way since its early days on the Commodore 64. In 1986 it took the conventional ideas of database systems and turned them upside down. Pioneered by Simon Tranmer and Dr Bruce Hunt, *Superbase Amiga* was the first system in the world to have a control panel resembling a video recorder. Although the control system was nothing extraordinary (start and end of file, next record, previous record and so on) its appeal was the simplicity it offered to novice users. Moreover, it was arguably the most powerful database system available for home micros, featuring powerful one-to-one relational search and reporting functions; with the added bonus of graphics support.

Power failure

Nevertheless, *Superbase* was anything but perfect for power applications. It lacked proper form layout, essential for office use in which speed and simplicity are paramount, and it lacked programmability. So, where tailor-made database applications were called for, *Superbase* was caught napping. Precision remedied this with the release of *Superbase Professional* which incorporated a powerful form editor and a customised database language, DML. This catapulted the product into the big league, where it could vie for a place alongside such PC database managers as *dBase* IV, *dBMan*, *Clipper* ... the list goes on and on. But *Superbase* is still the user's database, tailored with a graphical user interface and, that implies, the Amiga very much in mind.

Looking to the ever expanding PC market, Precision put *Superbase* on to the PC and ran it under Microsoft's GEM basher, Windows. The application lavished ease of use on adoring fans and received yet more improvements – Precision is not a firm to be found resting on its laurels for too long. The PC application has returned to its roots and *Superbase Professional* 4 has returned to the Amiga.

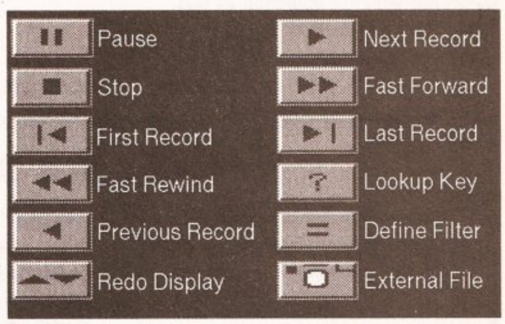
The *Superbase* range for the Amiga comprises a series of three relational database systems. Much of this review will concentrate on their features and detail the differences. If you are new to databases, or relational systems in general, consult the Beginners box first.

In essence, the three products comprise the following: a simple, entry-level database called *Superbase Personal* – probably the most powerful available at the price – a more powerful system with limited programming facilities on entry forms called *Superbase Personal* 2, and finally the professional system – the subject of this review.

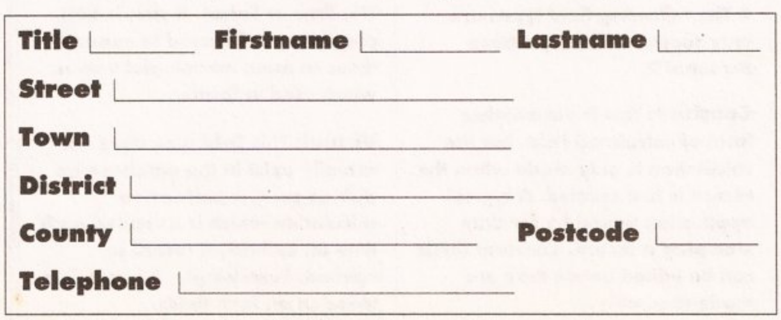
Superbase Professional is fully programmable and incorporates an object-oriented forms designer. Unlike many major packages, *Superbase* comes on a single program disk with another disk of examples and is accompanied by two enormous ring-bound manuals that weigh in at almost 6lbs. It requires 1Mb of RAM and works best with at least 2Mb and a BIG hard disk – the size of which, in part, determines the size of database from a theoretical limit of 1,000 million records.

It is easy to see that no-one is going to learn how to use *Superbase Professional* overnight, although it is fair to say that most people can get a flat-file database running in a matter of hours, even with a simple form background. Setting up a compete, multi-file relational application with multiple entry forms is something else again. It takes trial, error and, more often than not, programming.

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***Superbase*'s simple tape recorder-style control panel buttons.**



A typical input layout for a flat file address database system

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The first step in designing any database is defining the field list. This is one of *Superbase*'s strongest and yet weakest areas. On the plus side, creating and selecting field types is a doddle thanks to a wide variety of options and a good requester. On the minus side, mistakes can be somewhat tricky to correct. For instance, when fields are being added and edited, it is easy to change a field name accidentally. In fairness, *Superbase* is just trying to be helpful, but my 'tame beginner' found this feature confusing. Also, the field lists' order cannot be changed once it has been defined.

First base

Entering and viewing data is simple enough and exactly the same as in *Personal*, provided you don't want to fiddle around designing an input form. Forms are useful for enhancing visual appeal, but Precision could have included help screens to help new users around the trick bits.

Searching the database is a doddle if you're looking for indexed records, but finding specific groups requires the use of a filter; thus *Superbase*'s infamous filter requester takes the stage. It looks tricky at first, but surprisingly complex filters can be arranged with the minimum of fuss. Typically a simple filter might read:

```
CITY = "LONDON" OR CITY =
"MANCHESTER" OR CITY = "LIVERPOOL"
```

In other words, display all the records when the CITY is Liverpool, Manchester or London. Using the LIKE operator with wildcard pattern matching, much more complex relations can be achieved, ie:

```
LASTNAME LIKE "[A-M]*"
```

Displays only those records whose lastname fields begin with A through to M. Similarly, to do a postcode search on all the addresses in the Cleveland area:

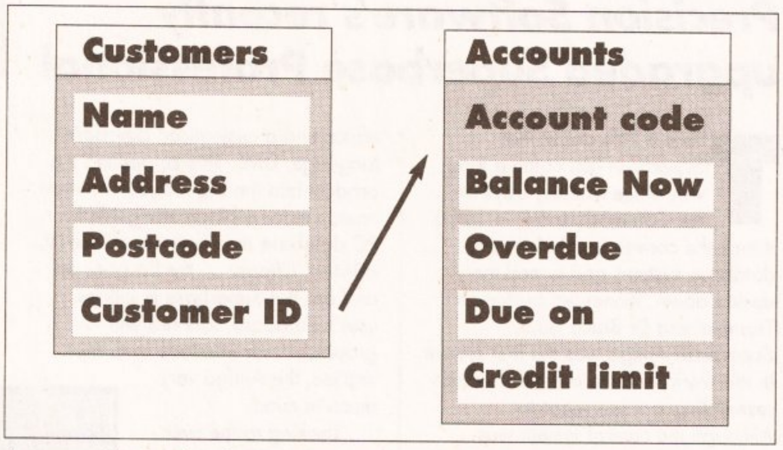
```
POSTCODE LIKE "TS*"
```

and combining the two would give:

```
LASTNAME LIKE "[A-M]*" AND
POSTCODE LIKE "TS*"
```

Such filters, when combined with labels and mail merges, can be effectively used to target a mailshot to clients in any particular area. Provided you have a postcode directory to hand, the search can be as wide or as narrow as you choose. The same idea could be used in an accounts' control system to search for people whose payments are overdue. Or in a stock control systems to monitor items that are under/overstocked and the demand for each one.

Selecting the Query option brings up a deceivingly simple requester, but this is the most complex part of the system. Although it only comprises four major lines, even experts agree that it's a beast to learn. The results are worth the extra effort because it is here the relations come to life. Certainly, there is no



An example of a simple one-to-one relational database system

SUPERBASE FIELD TYPES

The following list is a description of the field types supported in the *Superbase* range:

Text: Basic alphanumeric characters – each field holds from 1 to 255 characters (4,000 in *Pro* 4). Auto-capitalisation is available in *Personal* 2 and *Professional* 4 as well as multiple response (MR) fields. These allow one field to hold several items of data, although they are only really useful in fully (DML) programmable applications.

Numeric: Integer and floating point values in many different formats, including currency and exponent. The number of digits can be customised.

Date: Holds dates in several different formats, from short numeric: 12/2/91, to alphanumeric: 12 February 1991.

External: IFF picture fields. *Personal* 2 also supports text and *Professional* 4 supports sound samples. Picture fields can be incorporated into forms in *Professional* 4 only.

Calculation: A calculated field. This is useful for creating fields which are automatically created when the database is created or modified. Typical uses are for inventing customer numbers or for calculating prices including tax.

Required: This is a field modifier. The user must enter something in a required field before *Superbase* will accept the record.

Validated: Also a field modifier, this allows you to check for, say, a range of pre-determined values. Typical uses are for range checking numeric data to ensure it falls within preset limits.

● The following field types are only supported in *Superbase Personal* 2.

Constant: This is yet another form of calculated field, but the calculation is only made when the record is first created. A typical application would be for date stamping a record. Constant fields can be edited unless they are made read-only.

Read Only: This modifier will prevent the user from changing data within any affected fields. This prevents accidental modification of calculated (including constant) fields.

Time: Like the date function, this provides time fields with a variety of formatting options including 12 and 24-hour clock.

● The following field types are only supported in *Superbase Professional* 4.

Logical: The logical field type is a modifier to the Text field. These can only hold one character, which must be Y, N, T or F (Yes, No, True or False). A simple DML program can be used to expand these to more meaningful values when used in forms.

Virtual: This field type does not actually exist in the database on disk as such. It performs a calculation which is executed each time an individual record is opened. Surprisingly, it is possible to index on such fields.

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card index files, o the computerised Rolodex of client addresses. Each flat file 'card' is a single record made up of simple fields containing names, addresses and telephone numbers. A typical card may loo like the one shown at the bottom of page 105. Here, a simple set o data can be added to each field and each card saved as a record. Typically, such antiquated systems store the entire file in memory so the maximum number of records is limited by the amount of free store.

Back in the real world, this simple system is sometimes enhanced by holding records on disk and creating a separate index file. This is maintained by the system and is totally transparent to the user. The concept of an index, although simple, is often hard to grasp. The idea goes something like this: when records are entered, usually by a DP (Data Processing) clerk in an office, they are input in no particular order – literally, as each card/form is taken from a pile it is entered. This is sometimes called natural order.

Now, imagine you have a database of 20,000 people and want to find Fred Bloggs. (For the sake of argument, let's say Mr Bloggs' information is stored at record number 14,521.) If you know where his information is by record number it would be simple, but the database would also be pointless. Therefore, you would execute a search of the data looking for a record containing the name 'Fred' (in firstname) and 'Bloggs' (in lastname). Even on a 25MHz A3000 with a nippy hard disk this could take hours, which is where indexing comes in.

In the same way as you would use the index in a reference manual to find a relevant page or pages, a database can locate a record by its index number. It is achieved something like this: imagine each record is a page in a book. Just

as every page in a book has a page number, so every single record in a database has its very own unique number.

As the data is entered, one or more fields can be used to construct a number. The actual maths of this is irrelevant, but this number can be used to point to a record (page), just like the index in a book. This coded reference – called a key – is attached to each record number and recorded in a separate file, referred to as an index file. To find a record, all you have to do is enter the key code – eg the lastname. The database then cross-references that to the the record number and goes straight to it.

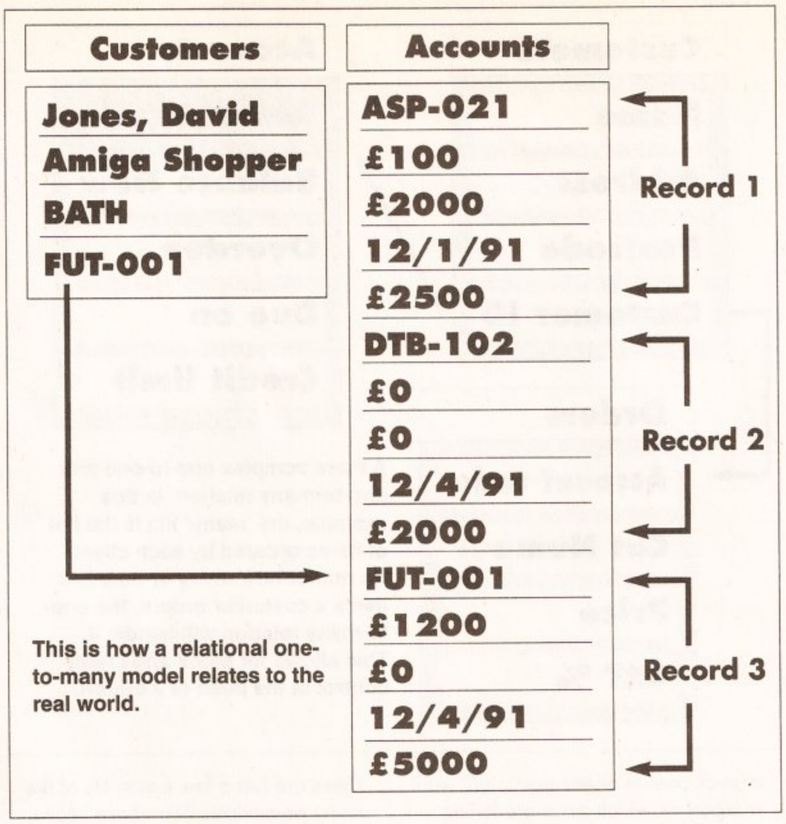
So what happens if two or more records have the same record key? Say you are creating an index of surnames. There might only be one Smiddy, but there will be many Jones, Smiths and so on. Although the names generate the same key, the list of record numbers is unique for each one. All the database has to do is search for numbers that match the value and then display the appropriate records.

So what practical use is a database to me?

Well, if you're a football fan you might want to keep tabs on your local league's performance over several years. In a one-to-many relational database, the 'one' file contains a list of all the teams in the league – colours, manager, players etc. The 'many' file contains the performance figures for each team over a period of years – games played, won, lost and so on. This can be done with a flat file, but it would be inefficient and difficult to manage because each club record would be limited to a fixed number of year-end statistics.

By constructing a one-to-many relation, there is no limit to the number of years of club performance statistics that can be entered. Each year is a separate

continued on page 108



This is how a relational one-to-many model relates to the real world.

guide like experience. The manual's examples only provide a starting point. Thankfully, it is possible to save complex queries for later use.

Query requester

In essence, things splits up as follows: the top of the requester has space to define a report title, a date and page numbers – these are added automatically by *Superbase*.

At the bottom, five radio buttons allow you to choose exactly how the query is output:

Screen: displays the query on-screen. This is mainly used during the testing stage and is its default. You can expect to do a lot of this because learning how to perform Queries is almost like learning a new language.

Printer: is primarily intended for printing final reports. Output is sent to the currently selected printer using either *Superbase*'s internal settings or the Preferences printer.

Disk: creates a text file on disk. This option is intended for either creating a report for later use or for import into a DTP package. Systems such as *Pro Page* support the use of style TAGs (Text Attribute Groupings) and, by incorporating these into the query definition, the report can be formatted and typeset automatically.

File: creates a completely new database based on the information and fields defined in the query. The new file can be used by *Superbase* as if it had been created manually.

Say: what? They can't be serious. Imagine what the voice synthesiser makes of foreign addresses.

Fields: is used to determine which fields are selected from the current file (or files for mult-file queries). Output defaults to a tabular layout, but a page layout is available for more complex reports. Column headings are normally taken from the field names, but again, these are user definable. In this box you will be able to specify: column heading, and position; the width of fields; blank likes; calculated expressions; printing styles; conditional form feeds; one field per line; and inclusion of selected field list.

It is possible to edit the text (program) directly, but much easier to get *Superbase* to do some of the work for you. Clicking the fields button brings up the query fields requester and from there you can select the fields and files you want to use. Of course, the files must be opened first for this to work. (Once a query definition is saved and reloaded, *Superbase* attempts to open any required files for you.)

At the simplest level, you would just select a set of fields to work with

> **"The power of relational data bases leaves flat files standing"**

and *Superbase* will tabulate them automatically, adding comma separators for you. This is a point-and-shoot operation, and thus very fast. Interestingly, as in BASIC, the semi-colon can be used to suppress extra spaces.

Live calculations: gives derived values that are particularly interesting. You can get the query to work out current results or pre-format field widths 'on the fly'.

For example, to add VAT and fix the number of decimal places:

```
FIX(Prices.Items * VAT,2)
```

Or to calculate a month in advance:

```
Date.Invoices + 30
```

and to customise the date by using a formatting string to override the default settings:

```
DATE$(DAYS(Date.Invoices +
30),"0d-mm-yyyy")
```

Even comment text fields of up to 4000 characters in length can be printed – complete with automatic

continued on page 108

JARGON BUSTING

DML:	Database Management Language. A programming language, not unlike Basic, used to customise *Superbase* forms or even write complete new database systems.
Field:	A single item of information, or the area in which that information is stored. See Field Types.
Fieldname:	The name of a field used as an aide-memoire to its contents. Fields can have just about any name – A, B, XYZ, but names reflecting a field's contents, Name, Address, Postcode, etc, are more useful.
File:	A group of records stored on disk.
Flat File:	A type of database in which each record is an individual entity – typically each works like a single card on a Rolodex. See Beginners Start Here for more info.
Record:	A group of one or more fields.
Relational:	A database in which each record can process information from several different data files simultaneously. Relational systems can be configured as flat-files if necessary. See Beginners Start Here for more information.
SQL:	Structured Query Language. A new approach to database management by which the system is controlled by a language that approximates to English more closely than ever before. This is not supported at present by any Amiga systems, but it is believed to be on the horizon.

continued from page 107

word wrapping – using the TRIM$ function like this:

```
TRIM$(Comments.BobData)
```

Report: enables the inclusion of *Superbase*'s extensive reporting facilities, such as SUM, MEAN and so on.

Filter: allows for the selection of records using a customised filter and the creation of the relations for multi-file reports. Relations are created between two or more files with the equality operator – remembering that all fields must be indexed. Also, relations must make sense. It is not reasonable to relate four files using two different keys.

Syntactically, a relation in Superbase is set up like this:

```
Number.Customers = Code.Orders
```

Here, for every number key in the Customers database, the corresponding record or records are retrieved from the Orders database using the code key. Multiple relations are achieved simply with the AND operator:

```
Number.Customers = Code.Orders
AND Code.Orders = Code.Stock
```

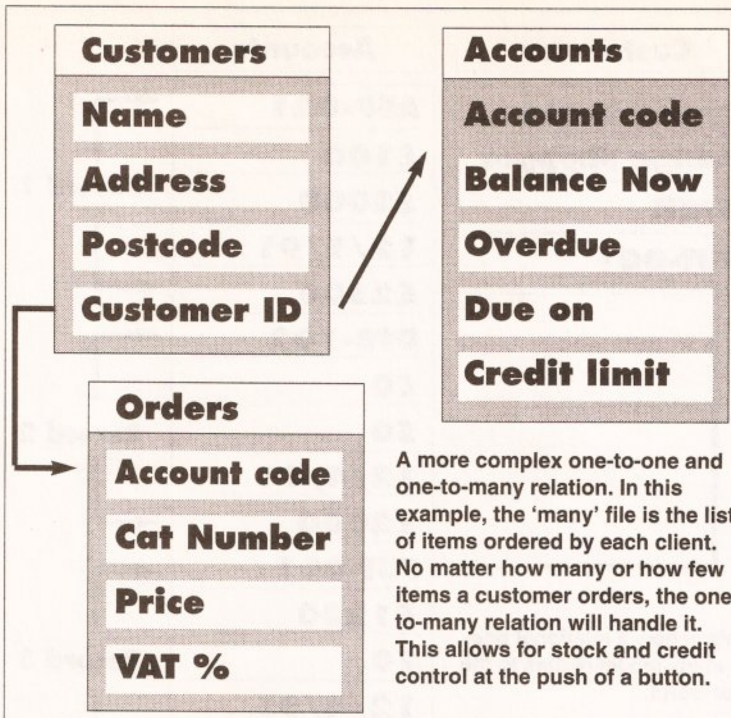
It is easy to see how this may confuse the filter expression. For instance, in a stock control system you might want a report on which items are falling below the minimum stock level and those that are being ordered by customers on a regular basis. This might involve the relation between the Customers and Stock databases in addition to the logic concerning high/low stock levels. *Superbase* handles this with the OR operator which, as you may know, also doubles as AND. This example uses OR in its native form:

```
Code.Stock = Code.Orders AND
(InStock.Stock >= Max.Stock
OR InStock.Stock <=
Min.Stock)
```

Order: Sets the sorting order. Generally, many applications will be sorted on a single indexed field – Lastname for example. However, this gadget also supports multi-level searches so data can be divided and grouped, even across several files.

These are just a few examples of the many possibilities *Superbase* has to offer in Query. There are literally hundreds of ways of arranging, searching, outputting, updating and reporting on data. To describe each one in detail would take up the whole review, which suggests a better entry method could be devised for such quick queries. I'd like to see better use made of the graphic interface to make queries easier; perhaps some sort of flowcharting method by which you could drop files and fields into little boxes. The mechanics of Query have changed very little since it was first devised and, given its inherent complexity, something should be done to make it easier.

Anyway, that's enough for this month. In our September issue I will be looking more closely at the forms editor and the Database Management Language, plus giving full checkout ratings for each aspect of this application. See you then. AS



A more complex one-to-one and one-to-many relation. In this example, the 'many' file is the list of items ordered by each client. No matter how many or how few items a customer orders, the one-to-many relation will handle it. This allows for stock and credit control at the push of a button.

THANK YOU LUVVIES, THANK YOU

I am indebted to the following for their help in the production of this article. Phil Moore for the artwork, Dave and Michelle Stebbings for cordon bleu inspiration, and Pat Winstanley for being a tame beginner. Also, thanks to Perry and Rue at Precision Software for assistance on the finer points.

continued from page 107

record in the Statistics file. One club may have two years of history, another may have eight. But the database can retrieve as many or as few of the records as have a matching index key. This is where the power of relational databases leaves the flat file-type standing. Moreover, this is not just a contrived example. This system is used by Bruce Smith, Editor of *Burlington non-league Football* to keep up-to-date records on several hundred teams.

Certainly databases are very versatile. They are responsible for things as diverse as junk mail and making sure everyone gets their Community Charge forms. This recent example is sad proof of the adage that computers do not make mistakes; people do, and the effect is often wide reaching. On a similar note, you can blame the ubiquitous use of databases for the millions of unwanted packages landing the on doormats of homes across the globe – each one targeted personally at the individual or home owner. Companies exist that specialise in compiling lists of such target groups and selling them to direct mail houses. This is legal, provided they are registered, but is still a nuisance.

Confessions of a Computer Journalist quotes a tale in which two mailing lists got mixed up. Proprietors of certain specialist boutiques were amazed to receive a catalogue of surgical support garments. At the same time, an exotic lingerie catalogue got mailed to the residents of over 200 'Happy House' retirement homes throughout the United States. People who study the complex interplay of cause, effect and direct mailing, say this sort of thing happens all the time and the repercussions are impossible to quantify. *Confessions of a Computer Journalist* defines these analysts as: "mindless berks who wouldn't know a computer if you hit them with one."

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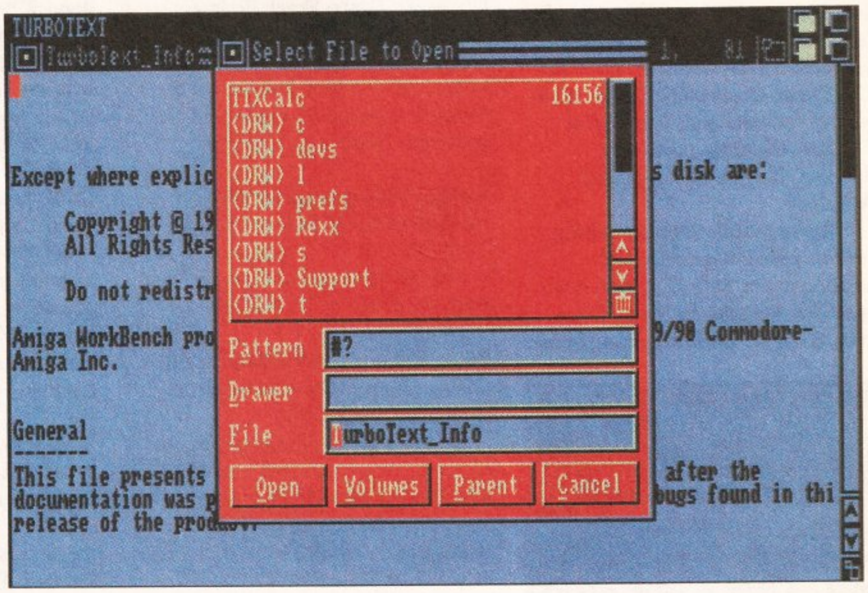
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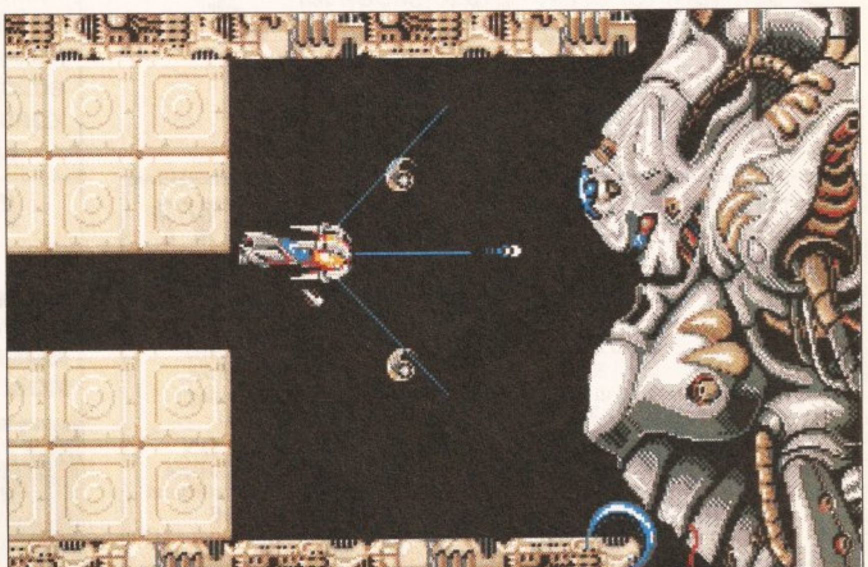
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Topics include problem solving, such as printer interfacing, PD copying nights (only PD!), and guest speakers. Ring the secretary, Mike Hatt, on 0753 645728 (8pm-11pm).

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Amiga Users Klub, Windsor House, 19 Castle Street, Bodmin, Cornwall PL31 2DX.
Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga computing and help with problems. Contact Jack Talling.

Amiga Witham Users Group, 85 Highfields Rd, Witham, Essex CM8 1LW
Distributes tips and Basic programs. Keith Anderson ☎ 0376 518271

Basic Programmers Group, 68 Queen Elizabeth Drive, Normanton, West Yorkshire WF6 1JF
A group set up to encourage the use of Basic, exchange ideas and assist those beginning with the language. A free newsletter can be got from Mark Blackall ☎ 0924 892106

Chester-le-Street 16 Bit Computer Club, Conference Room 2, The Civic Centre, Newcastle Road, Chester-le-Street.
The club meets every Monday from 7.30-9.30pm to see each other's software collections, exchange advice and tips. Contact Bob ☎ 091 2653671.

Club Amiga, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear DH4 4PP.
Membership costs £5 a year for a newsletter, PD software and a 24-hour telephone helpline service. For more info send a SAE to Chris Longley.

Independent Commodore Products Users Group, Biggin Hill Library, Church Road, Biggin Hill, Kent.
Meets most Thursdays from 7.45-9.45pm. There are lecture nights and open nights where members can get help. Contact John Bickerstaff after 8.30pm ☎ 081 6515436.

The Pennine Amiga Club, 193B Oakworth Road, Keighly, West Yorkshire BD21 1RE.
Offers free membership, free advice, and circulates a newsletter. Contact Simon Booth ☎ 0535 600437.

Slim Agnus, 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW.
Meets on the last Thursday of the month. PD library, bulletin board, advice from Amiga experts. Contact Philip Worrel.

Software Exchange Service, 13 Bournville Lane, Stirchley, Birmingham, B30 2JY
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TEXtual analysis

Peter Danckwerts examines the latest upgrade of AmigaTEX – an application aimed at taking the trauma out of technical typesetting

TEX is a typesetting language which has been around on mainframes for more than a decade. It is now available for most micros, including IBM-compatibles, Macintoshes and Amigas. There is even a public domain version for the Atari ST.

It is not a desktop publishing program but a typesetting program in which text must be coded in an editor or word processor before being compiled into a DVI (device-independent) file which can then be viewed in a Preview window or sent, via a driver, to your printer. The approach may seem rather primitive to devoted DTP-ers but it offers some advantages as we shall see.

AmigaTEX

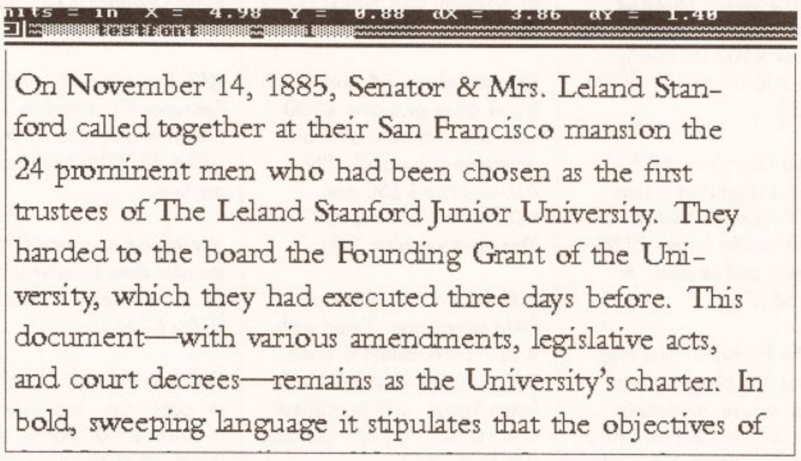
The Amiga implementation is far more than a port of TEX. Tomas Rokicki has taken full advantage of the Amiga's superior facilities to enhance the program's functionality. In particular, the multitasking operating system allows the TEX and Preview programs to be open simultaneously; TEX passing pages to Preview as they are parsed. Both TEX and Preview support ARexx, so the possibilities of linking them to other programs are immense.

Depending upon the printer drivers you order, you could receive 30 or so disks. Don't be alarmed. These are mostly bitmapped fonts at different sizes and resolutions.

Why use AmigaTEX?

If you want to produce documents containing distorted type, complex visual effects or colour, you can forget *AmigaTEX*, but there are things that *AmigaTEX* can do far better than a DTP program such as *Professional Page*. TEX was written by a mathematician and if you want to set maths there's nothing to touch it. Try setting the example at the bottom of the page in *Professional Page* and see how long it takes. In TEX it takes about 20 seconds.

TEX is also very smart about typographical matters. It's the only Amiga program that comes with small caps and ligatured letters (such as ff, ffl, ffi).


X = 4.98 Y = 0.88 dX = 3.86 dY = 1.40

On November 14, 1885, Senator & Mrs. Leland Stanford called together at their San Francisco mansion the 24 prominent men who had been chosen as the first trustees of The Leland Stanford Junior University. They handed to the board the Founding Grant of the University, which they had executed three days before. This document—with various amendments, legislative acts, and court decrees—remains as the University's charter. In bold, sweeping language it stipulates that the objectives of

***AmigaTEX* operates differently from a normal DTP application. Text must be coded in a word processor before compilation in the preview window.**

Version 3.1a of *AmigaTEX* has a number of important new features. Most notable is the inclusion of the PD PostScript interpreter, *Post*, which permits the use of PostScript graphics and fonts. Virtual fonts are now supported, both for existing fonts and for PostScript ones. Virtual fonts in *AmigaTEX* are rather like Compugraphic outline fonts in *PPage*; the program will resize them to order (although it takes several minutes). They have the added advantage that you can construct a virtual font from several others. For instance, if you were perverse enough to want Garamond text with Helvetica numerals, you could easily construct a virtual font to provide just that, saving you the trouble of changing fonts when you want to set numerals.

PostScript fonts, if you have any, are easily converted to TEX format with the utilities provided. However, you will need a program such as *Dos2Dos* to convert the disk format first. Conversion is so smart that it can even produce small caps and ligatured letters for fonts that lack them. Once installed, they behave at least as well as the native Computer Modern faces, both with the Previewer and with printers. Type 1 fonts are even rendered with 'hinting' (Adobe's font enhancement technique), so DeskJet output is comparable with that from a PostScript printer.

Not just TEX

If you install the complete package (apart from bitmapped fonts), you'll find that it takes up about six megabytes of hard disk space. That's because you haven't bought one program but about two dozen. Apart from *AmigaTEX* itself, there are the utility programs (programs for converting fonts, etc.), *Post*, *LaTEX*, *SliTEX*, *BibTEX* and *Metafont*. *LaTEX* is a less flexible, but easier-to-use, version of *TEX*; *BibTEX* is a referencing program to use with it.

The most stunning part of the bundle is *Metafont*, a type design program with unlimited possibilities. However, you should not expect to be turning out new designs by the end of the week; *Metafont*, like TEX, is a text-based program. Each letter is described in mathematical terms rather than drawn with a Bézier tool.

What's up doc?

Because TEX does not work with pull down menus, it is quite impossible to use without reading the documentation. *AmigaTEX* comes with a very substantial manual which is both lucid and witty, but it does not tell you how to use TEX. It tells you how to install and invoke the program, but TEX is such a complex program that it needs a very big manual. That manual is *The TEXbook* by Donald Knuth, inventor of TEX.

After-sales service is very good. We all know those software companies that ask you to register and then never answer the phone. Tomas Rokicki of Radical Eye Software isn't like that. He's only a phone call away and because it's his program he has all the answers. He also runs a bulletin board. Best of all, when you're least expecting it, *AmigaTEX News* pops through your letter box. It's only six pages, but is crammed with hints and news.

Final solution

If you have long documents to set, or if your text is interspersed with mathematical formulae, then you should consider this program.

Those who know TEX on other systems will be impressed with this implementation, and those with an earlier version will find the new additions well worth having. TEX also benefits from a very wide user base; many university mainframes and some university presses (such as Cambridge University Press) support it and there is a very good TEX user group in the States. AS

SHOPPING LIST

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$$\int_0^\infty \frac{t-ib}{t^2+b^2} e^{iat}\, dt = e^{ab} E_1(ab), \qquad a,b>0.$$

Laying out mathematical formulae in a conventional DTP application can be a nightmare, but not with *AmigaTEX*

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2D Painting packages

To take advantage of the Amiga's superb graphics system you need the software to create drawings and animations. This summary table shows the principal features of seven of the leading programs, together with the ratings they received when reviewed in *Amiga Shopper*. For more details see issue 2, available for £1.50, see page 62.

PAINT PACKAGE FEATURES AND RATINGS AT-A-GLANCE GUIDE

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HAM				●		●	●
Overscan			●	●	●	●	●
Airbrush		●	●	●	●		●
Airbrush size			●	●	●		●
Freehand dotted		●	●	●	●	●	●
Freehand continuous	●	●	●	●	●	●	●
Line		●	●	●	●	●	●
Curves (Bézier)			●	●	●		●
Rectangle		●	●	●	●	●	●
Circle		●	●	●	●	●	●
Fill		●	●				●
Brush fill			●	●	●		●
Perspective fill			●		●		●
Brush tools		●	●	●	●	●	●
Freehand brush				●	●	●	●
Brush rotate		●	●	●	●	●	●
Wrap on 2D			●	●		●	●
Wrap on 3D							●
Perspective brush			●		●		
Antialiasing			●	●	●	●	●
Colours (max)	12	32	64	4,096	64	4,096	4,096
Print in colour			●	●			●
Print in PostScript					●		
Page flip animation			●				●
ANIM animation			●				
Anim brushes			●				
Files: IFF	●	●	●	●	●	●	●
ANIM			●				●
Animbrush			●				
Brush			●	●	●	●	●
PostScript					●		
Grid		●	●				●
Magnify		●	●	●	●	●	●
ARexx interface			●	●		●	●
Text		●	●	●	●	●	●
Text shadows							●
Colourfonts			●	●			●
VERDICTS							
Ease of use	14	9	15	10	6	14	10
Speed	6	5	8	7	7	6	3
Output	4	4	9	9	9	7	6
Graphics handling	2	5	8	8	6	4	5
Colour	5	7	9	9	5	9	8
Text editing	0	3	4	3	3	5	3
Tools	6	6	9	9	4	8	7
Documentation	4	6	8	9	5	7	4
Price value	18	16	20	19	8	19	9
OVERALL	59	61	90	83	53	79	55
Price	£19.99	£TBA	£79.99	£129.99	$139.95	£79.95	£89.95
Supplier	HB Marketing	Accolade	Electronic Arts	Electronic Arts	Oxxi Aegis	HB Marketing	Software Business
☎	0753 686000	071-738 1391	0753 49442	0753 49442	01012134271227	081-309 1111	0480 496497

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Whether buying over the phone from adverts in Amiga Shopper or at a local computer store, here's our advice on how to avoid problems

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop, before taking it home, to make sure it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your purchase receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price to make sure it's the same as the one advertised.
- Check that what you're ordering is actually in stock.
- Check when and how the article will be delivered and that any extra charges are as stated on the advert.
- Make a note of the date and time when you are making the order.

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We want to ensure that buying mail order through *Amiga Shopper* is a straightforward, hassle-free experience.

Taking the advice offered on this page will help make it so. But if, despite this, you run into problems – for example, failure to deliver goods within 28 days, without reasonable explanation – we will do our best to help sort things out.

Simply contact our Customer Liaison Officer, **Helen Self** at **Future Publishing Ltd, 30 Monmouth Street, Bath BA1 2BW**.

You should supply her with full details of the advertisement you responded to, which issue if *Amiga Shopper* it was in, the goods ordered and precise details of the problem encountered. She will then do her best to solve your problem. However, please bear in mind that your first contact in any enquiry should be direct to the company you have ordered from. In 99 cases out of 100 they will be able to resolve any difficulties.



Customer Liaison Officer Helen Self will try to sort out any major problems with advertisers.

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As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

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Whichever method you buy by, you can return it if it fails to meet any one of the following three criteria:

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BUYING PD

Even though buying PD software is relatively inexpensive, you should still apply the same rules of confirming all transactions as clearly as possible and making sure that you keep accurate records of all communications.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are supposed to be non-profit making operations. AS

PUBLIC APOLOGY

M. D. Office Supplies would like to apologise to all its competitors in this magazine. As ever we shall be offering Diskettes, Storage Boxes, etc at prices which are simply INCREDIBLE

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Music Section

C006 Sonix No. 1
C030 Share & enjoy equalizer
C029 Sonix No. 7
C043 Alf demo 1
C061 Classix 1
C066 Royal Amiga Force 1
C067 Disk B to above
C087 Kylie Its no secret
C088 Disk B to above
C093 Bacteria demo
C101 Sonix classix
C108 Digital concert 3
C113 Sonix No.17
C130 Budbrain demo 1
C131 Disk B to above (18)
C142 Digital concert 1
C143 Digital concert 5
C156 Donald weres yor trousers
C163 Genesis Land of confusion
C189 Treacl mega demo Disk A
C190 Disk B to above
C191 Disk C to above
C192 Alkatraz demo disk A
C193 Disk B to above
C194 Disk C to above
C198 Star trekking disk A 1 Meg
C199 Disk B to above
C200 Xmas carols
C201 Good Morning Vietnam
C210 Alf demo 2
C229 Hot wired
C236 Turtle demo by sector 16
C244 Amazing Tunes disk A
C245 Disk B to above
C246 Disk C to above
C248 Budbrain 2
C303 Startracker V1.2
C305 Sonix No.5
C308 Zenn sound box
C324 Noisetracker
C327 Turtle power disk A
C328 Disk B to above
C329 Disk C to above
C356 Beatmaster 808 state
C367 Ultimate FX
C380 Mucky Morris & the Cowpats
C410 Digital Concert 2
C411 Digital Concert 3
C412 Digital Concert 6
C416 Blues Brothers disk A
C417 Disk B to above
C418 Disk C to above
C419 Dr Awesome & Fleshbrain
C425 Arni sampled off radio Disk A
C426 Disk B to above
C428 Smith & Jones 1 (18)
C429 Smith & Jones 2 (!8)
C430 Smith & Jones 3 (18)

All public domain disks are virus checked with the latest version of the Master virus killer.
Anyone finding a virus on one of our disks please let us know and it will be removed from the disk.

Amiga Public Domain Prices

Prices vary on how many disks are needed to make a program work. ie some music disks need 2 or more disks to work these are called sets.

Single disks	£1.50 each
Two disk sets	£2.75 per 2 disk set
Three disk sets	£4.00 per 3 disk set
Four disk sets	£5.25 per 4 disk set

Min order 5 disks

More disks are in the collection, too many disks to list here. Last count over 900.

Utility Section

E001 SID
E017 Printer utilities 1
E020 Fonts disk 1
E021 Fonts disk 2
E022 Label designer
E028 Ultimate utilities
E029 Virus Killers disk 1
E032 Boot block makers disk 1
E034 Printer utilities 2
E045 Business card maker
E046 Viruscope (good)
E051 Ncom V1.9 (modem util)
E056 Tetracopy
E057 Catalogue Workshop
E063 C Manual
E070 QL Emulator
E071 Disk B to above
E072 Disk C to above
E074 Spreadsheet
E083 Master virus killer
E088 Textplus word processor
E094 Flexi Wosname database
E105 North C
E114 Slideshow construction set
E119 Dope intro maker
E130 Rim database
E140 A gene geneology program
E141 Forms really unlimited
E153 Disk crunchers

Games

D004 Monopoly USA version
D008 Paranoid (Breakout game)
D013 Peters Quest
D020 Poker Solitaire
D026 Blackjack/Solitaire
D027 Star Trek disk A
D028 Disk B to above
D035 Break out games
D044 Flashbier
D052 The Drip
D054 Breakout Construction Set
D057 Letrix
D065 Wet Beaver Tennis Game
D069 Tiles/Battleships/Chess/Tetris II
D070 Tomtespelet (2 player)
D071 Return to Earth
D072 Star Trek the Next Generation
D074 UGA Games Compulation
D075 Snake Pit Game

Graphics Section

F011 Space Ace demo
F015 3D Arm
F025 Pugs in Space
F030 Gymnast Amin 1 Meg
F049 Fractual Flight demo
F057 Viz Pics (18)
F058 Fantasy Pictures disk A
F059 Disk B to above
F086 Enteprise leaves the Dock Anim 1 Meg
F091 Stealthy Manoeuvres 1 Meg
F097 Argatron Anims 07
F098 Argatron Anims 24
F100 Argatron Anims 02
F101 Argatron Anims 22
F102 Argatron Anims 23
F104 Argatron Anims 17
F109 Clip Art disk 1
F110 Clip Art disk 2
F111 Clip Art disk 3
F112 Clip Art disk 4
F113 Walker demo 1 2 Meg
F114 Disk B to above
F115 Walker demo 2 2 Meg
F116 Disk B to above
F125 Station Anim 2 Meg
F126 Disk B to above
F127 Disk C to above
F141 Fillet the fish 1 Meg
F164 Tobias richter slideshow
F165 Disk B to above
F166 Lost In Space Anim 2 Meg
F167 Disk B to above
F168 Disk C to above
F170 Batman the movie 1 Meg
F173 Juggler meets the lady
F174 Fantasy space slideshow
F176 Mandlebrot generator
F179 Iraq demo 1 Meg
F180 Amy the Squirrel at the Movies 2 Meg
F190 Tron Anim 1 Meg
F191 Disk B to above
F200 Robin Hood slideshow with music (Cartoon)
F209 Life of Brian slideshow with samples from film
F219 Franklin the Fly anim
F228 Italian Job digi Anim 1 1 Meg
F229 Italian Job digi Anim 2 1 Meg
F242 Stealthy Manoeuvres Swiss army F16 Anim

Directory disk £1.50 inc P&P. Contains some free PD utilities/music. Orders taken 24hrs a day on the answerphone payment via Access & Visa or mail order payment by postal order or cheque made payable to:
C & N COMPUTERS
Orders despatched within 24hrs (Mon-Sat). Phone orders despatched Mon if given on Sundays.

Software for free



"Buying and choosing PD software can be a real minefield. Let me help you get the best of what's on offer for free."
Phil 'Snouty' South

BEGINNERS START HERE

oftware for free? How's that then?

his may sound like a call to piracy, ut public domain software is free to nyone. Yes even you sir, you at the ack with the Jolly Roger. There isn't ny catch, unless you count the fact hat there is so much PD software on ffer that it's hard to choose what ou're going to have. And that's vhere I come in.

But what does PD mean?

he public domain concept is borrowed rom the early days of mainframe ystems, where enthusiasts (called hackers" then, before the word had ess pleasant connotations) produced rograms and distributed them to their riends and fellow hackish types, sking for no payment but the glow of eing recognised as a truly hackish oder. The copyright was waived by he author, and so the program was aid to be in the public domain - that is o say, any member of the public had right to copy and use the program owever they wished, provided that he author's credit and any relevant ocumentation was distributed with he program.

So how can I get hold of all this vonderful free PD?

ou can either buy it from a PD library see the last page of this article for a ist of PD houses in the UK) or, if ou've got a modem, download it rom a bulletin board. These are omputers with modems, which nyone can use a phone and modem o log on to, download a lot of demos nd utilities, leave a few messages nd programs of their own and log ff. You'll find many boards with Amiga files - check out our Comms ages for phone numbers.

There are many types of program available in the public domain, ranging from superb graphic demos and useful utilities to pathetic programs which crash your machine the minute you try to run them. Every month, Phil South will let you know about the best and the worst on the market; but first, a look at what sort of things you can expect to find...

Utilities

These are programs which help you use your computer. Some are just simple commands for your C directory for use from the CLI or Shell, while others are complete menu-driven programs to compress files, convert them from one format to another or even rescue broken disks. The best disks to look for are the collections with a selection of the best utils all squeezed on to one disk. Virus killers are some of the most useful PD utils, and being PD they are free – users of many other kinds of computer have to pay good money for decent virus killers, but we get them for nothing.

Applications

Some of the best programs are PD. SID, for example, is one of the best graphic interfaces for AmigaDOS, and it's PD (or, to be more precise, 'shareware'). SID is a graphic front end for the AmigaDOS file system, allowing you to move files around, delete them, rename them, copy them and re-organise your disks. In fact, I don't know a single Amigahead who would be without his copy of the program. And there are many other kinds of programs too, from business to graphics applications. Check the PD libraries before you lash out some cash on a commercial program – you may find a PD solution which could save you loadsamoney (to use a rather outdated phrase).

Demos

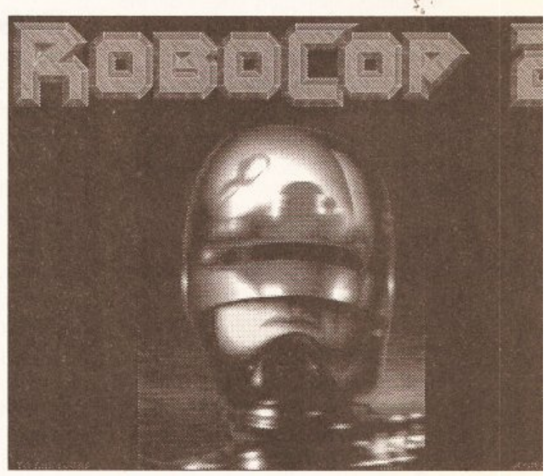
This is a new art form. The demos are created by a team of hackers, usually called a "crew" or "team", who get together and have a "late night hack attack" and create a dazzling demonstration of their programming abilities. The demos can be graphics- or music-based, but they always have the feel of a pop video, and the music is generally of the dance variety, although some more exotic sonix do come out from time to time. Demo teams usually go on to be professional programmers after a while, so their demo days are usually limited. Scoopex and Silents are two of the best teams, and also the likes of Kefrens are not to be missed. Imagine a cross between a dance record, a video and a lightshow and you're getting the general idea.

Game Demos

In recent years, the various major software houses have watched the PD arena growing and have noticed that people buy demo disks, especially when on the cover of a magazine. So they put out demos, sometimes fully playable demos, of their new releases, allowing the punters to try the game before they buy. Demos of this kind usually turn up on the covers of magazines like our sister publication *Amiga Format*, and then before long the demos turn up on their own in PD libraries. A successful and popular demo translates into a very popular game – for example, take note of the enormous success of Lemmings, from Psygnosis, which started life as just such a demo.

Slideshows

Some Amiga artists spend a lot of time creating works of art on their computers, which is no good if nobody sees them. So many Amiga artists make slideshows of their work for public consumption. If you're very clever (or own one of the fab new snapshot cartridges) you can grab the art and examine it to see how it was done, and you could even use it as clip art in your DTP packages. (Beware, though, some PD artists may get a bit cross if you do. Remember that unless explicitly stated, copyright remains with the artist, which means



A slideshow from Crazy Joe's features this crazy guy.

that you can't reproduce the work without their permission.) Some of the most stunning Amiga art comes from a chap called Tobias Richter, an artist who lives in Germany. He uses a ray-

continued on page 120

Paying For It

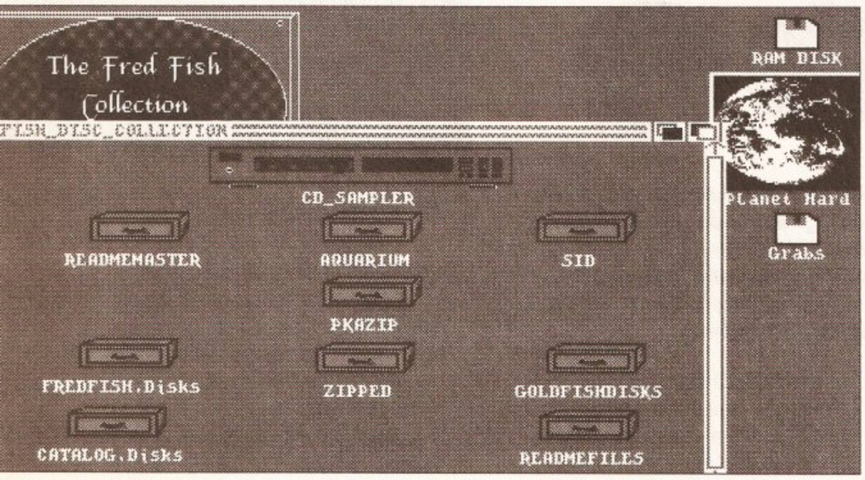
PD is free, but disks, postage and wages aren't, so be prepared to pay between 99p and about £2.50 per disk from a PD software house. The price you pay is up to you, although some people get a bit cross paying £2.50 when other houses do disks for 99p. I suppose it depends on how the disks are duplicated. If the company hasan office and a duping machine, then it costs money to run. But if it's built the PD house into an existing business, then obviously it has no overheads to speak of. Some 99p PD houses are good, others are terrible. The only way to find out for sure is to spend 99p. Or read *Amiga Shopper* every month, for the same price, and find out from us!

continued from page 119

tracer called *Reflections* (coming soon to the UK), and turns out some amazing stills and animations based on *Star Trek* and other sci-fi subjects. Watch out for him under the name Agatron.

Music Demos

Some PD authors are music nuts, who spend their lives churning out disks of tunes for you to play on your Amiga. Some are *Soundtracker*- or *Noisetracker*-sampled tunes from the charts, re-mixed in the Amiga. Others are synthesised tunes from the classics. Most are pretty good. If you like well-sequenced music, I think you'll be surprised at the very high quality of the tunes around on the Amiga PD circuit.



Got a CD-ROM player? Then save yourself anything up to £800 by buying the Fred Fish collection on CD-ROM instead of floppies.

PD categories

There is some PD which is not free to all. This comprises:

1 Licenseware

These are games or programs which are licensed to specific PD houses, to prevent the free distribution of the program – although the price to the consumer is more or less the same. *MED* is a good example; it's a music program which is licensed to Amiganuts United. This program is sold by Amiganuts, and a proportion of the fee goes back to the author in Finland. This scheme works better than shareware (see below) from the authors' point of view, as the money is handed over when the disk is purchased, rather than trusting the users to pay up later.

2 Shareware

This is a branch of PD that you pay for, but are allowed to use free for a short time first to see if you like it. It isn't expensive, as the author usually only asks for between £5 and £25 for his or her efforts. In most cases it's worth paying in the end, as you get free upgrades and documentation.

There are lots of 'ware'-type schemes. Freeware is usually the name given to normal PD. Beerware was one idea where the fee for using the program was to send the author some beer. Exclusiveware is a new idea, which works a lot like licenseware. Others, like Charityware – if you keep the program you are requested to donate money to a (normally) specified charity – are reasonably easy to work out from their descriptions.

Disk magazines

Magazines on disk are not new, but there are more now than ever before. *Newsflash*, *17 Bit Update*, *Computer Lynx*, *Scanner* and *Jumpdisk* are prime examples of the type of thing I'm talking about, and they are, on the whole, very good. Magazines of this type usually contain PD software, demos and music, plus a lot of graphics and text as well. The text is normally reviews of software, or perhaps a bit of hardware, and is usually quite short to keep the amount of different text files up and leave space for programs too. The text is sometimes a bit on the ropy side, but that's what you get for having a writer who's an editor too. (*Too true – Ed.*) A spelling checker wouldn't hurt some of these guys, I can tell you. Not, of course, unless you hit them with the disk!

This month's selection

Right, lets get down to business. I've a good range of stuff this month, from games to business, utilities to demos. But first, let's start with…

CD-ROM

An interesting turn up for the books this month was the appearance of a number of a number of CD-ROM PD disks on my desk. The two sets are the Hypermedia Concepts disk snappily titled *The Fred Fish Collection On CD ROM*, and the specially-compiled Xetec collection *Fish & More* volumes 1 and 2.

The CD-ROM idea is perfect for public domain, as you usually copy the programs from the source disk and never write to them anyway. Having the 400+ Fish disks on a single CD is certainly a boon, and is a good short cut to catching up on what you've missed out. To buy the whole Fish collection up to date on floppies would cost about £400-£800, depending on where you buy, so getting them all on a CD costing £30-odd is certainly a bargain. In fact the *Fish & More* disk comes free with the Xetec CD-ROM drive, which is a bargain in itself.

The idea of having the whole of the Fish library on a single disk is a stunning idea, and as a basic reference library of every type of utility and demo you could ever want it represents quite startling value for money. All the demos you've ever seen are on these disks, and quite a few things you couldn't even have guessed at, like a program which tests your knowledge of Thai, a program which converts IFF pictures into PostScript format, and programs which make your screen melt down to the bottom like someone's put a blowlamp on it! There are some mind melting demos, too, like the *Walker* demo and the *Probe* demo – all the classics. Plus some of the best games I've ever played. I especially like *Star Trek: The Next Generation Trivia Challenge* (Fish 404 & 405), *MechFight* (Fish 410) and *Moria* (Fish 194).

As we will all have CD-ROM units before the end of next year (confident prediction), I suggest that one of these Fish disks be high on your list of the first CDs to get once you've got a drive. Like most innovations, once you've used one it's hard to imagine life without it.

Many thanks must go to Mick Graham of Pazaz for the loan of the Xetec drive and the *Fish and More* disks. You can contact Mick to talk about CD-ROM at Pazaz, 14 Douglas Street, Dunfermline, Fife, Scotland. ☎ 0393 620102.

UTILITIES

Our pile of utils disks comes from Electriclown this month, and there is a very sound reason for this. Electriclown sets out its disks very sensibly into groups of utilities. All the disks I received have the nice new menu system by Nico Francois on them, and very posh it looks. All the programs worked from the menu, too, which is sometimes not the case with these things. The creator of these disks has obviously gone to a lot of trouble to test the products and ensure that they function properly. (I've had some rubbish in here, I can tell you, stuff that crashes and doesn't link up with other bits of the program… blurgh. Thank goodness this isn't the case here.) Electriclown disks are nicely put together, with a lot of uncommon programs and utilities. Nice one EC.

Backups

Electric 15

The *Backups Disk* contains *Easy Backup* and *Easy Restore*, a pair of hard disk backup and restore programs. Both are CLI-based, although you can use them from the neat menu interface. Also on the disk are some copiers like *NIB*, a nibble copier, *P-Copy*, *RAMCopy*, *RattleCopy* and *TurboBackup*, all of which enable you (surprise, surprise) to back up your floppies. A curiosity here is the inclusion of a program called *PumpyCopy*. The pump in question is obvious when you start the program, as fans of *Viz* will

continued on page 12…



This is the program selector from the *Darkness Megademo II* disk. I don't know why Albert's in the picture; there must be a reason…

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1245 Rings of Zon *
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continued from page 120

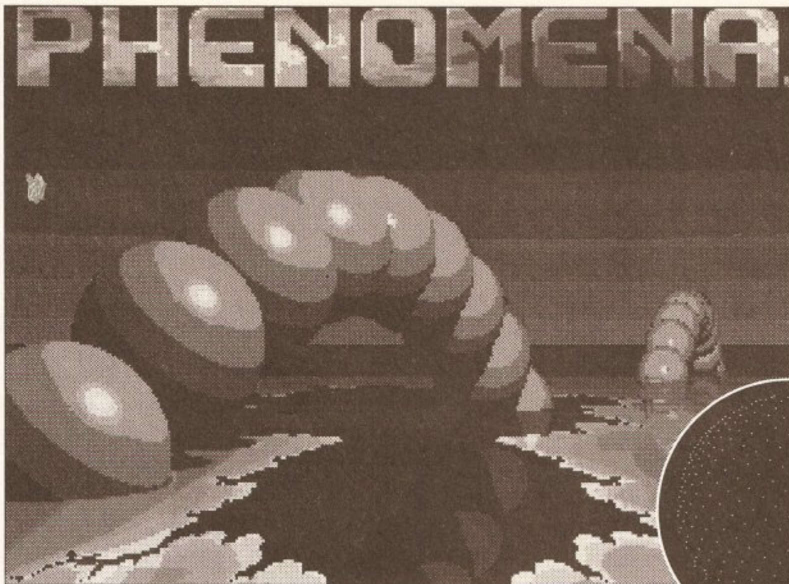
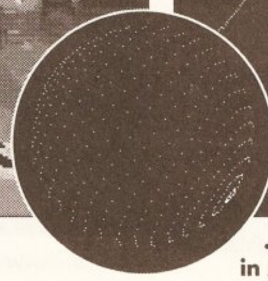
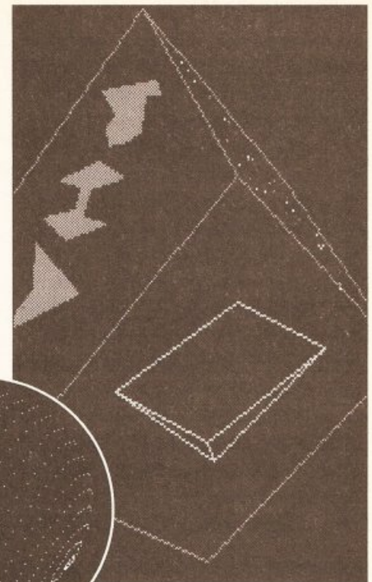
recognise the face (and the pumping trousers) of Johnny Fartpants. A good disk, packed with useful backup stuff.

Value for money 9/10

Home Utils
Electric 9

The *Home Utils* disk contains some programs thought to be of use in the home. Two calculation programs, *CalKey* and *Multicalc*, allow you to keep abreast of household finance, while *DietAid* helps you count the calories by adding up ingredients to give you the calorific value of a recipe. And finally there is *Furnish*, a program which lets you draw an area and fill it with furniture, to try out a design for your rooms before you stick the stuff in it. A bit thin as disks go; the programs are reasonably useful, but I just can't decide if it's interesting enough.

Value for money 4/10

For a superb demo, you could do far worse than treat yourself to Phenomena's *Enigma* disk... ...which shows the best in Amiga programming.

Icon Utils
Electric 36

The *Icon Utils* disk contains obvious programs like *Brush2Icon*, *Itb* (Icon To Brush) and the *IE* icon editor, but more esoteric types of prog are here too, like the *CNVPSGI* and *CNVNEWS* programs. These two items convert graphics from the Commodore 64 programs *Newsroom* and *PrintShop*. Exactly how you are meant to get the graphics from your 64 to the Amiga isn't stated, but provided you have some kind of way to get the graphic on to an Amiga disk (an emulator like the PD program *The 64 Emulator* might do the job), these programs do all the conversion from C64 code segment to IFF file. *SmartIcon* allows you to add a gadget to the corner of all your windows to iconify them at a touch. *MakeIcon* is an icon toolkit, and finally *Icontype* enables you to search a disk and convert the type to suit your purposes – altering a disk icon to be a file icon and that sort of thing. A tightly made disk, and packed with useful utils for icon creation and tweaking.

Value for money.............8/10

Compacting Utils
Electric 6

Compacting Utils is another of these EC disks that was more fun to play with than I was expecting. I thought it would just be *Arc*, *Zoo*, *Lharc*, *Zip*, *Warp* and all that. But this is a power packed disk, ahem, containing *Power Packer 2.3b*, a matched pair of programs called *DiskComp* and *DeComp* and a bewildering variety of disk file crunchers: for example, crunchers on the disk include offerings such as *Titancruncher*, *Megacruncher*, *Mastercruncher* and so on. This is very useful, as you can not only crunch files with these programs, but also uncrunch files too, meaning that you can get at text files which ordinarily you'd have to use PPmore to get a look at.

Value for money 8/10



Is this really what they meant by a Megacruncher?

DEMOS

Darkness Megademo II
17 Bit disk 1047

The Darkness team are new, but obviously they've done another demo before this one as it's numbered 2. And, unlike many new demo teams, the quality of their work is top notch. The *MegaDemo* begins with a wicked intro, featuring ray-traced text. Then it goes to the program selector, an A1000 on a desk with a row of disks in front of it. You select the demo by clicking on the disk, and it animates itself into the drive.

Of the seven demos on offer, I liked the *Total Record* demo, where you get more bobs on screen than the human mind can stand, loads of animations and music, and a lot of skilled coding by Atlantic, graphics by Troglobyte and logos by Zona Norte. The music, very classily done by Nico, runs throughout and provides a lot of good background to the startling visuals. Expect to see a lot more of the Darkness team in the near future.

Value for money.............9/10

Tuff Enuff & Bass-O-Matic
NBS disks L611, L612 & L613

The Crusaders have cracked down on the spreading of their wares to any and every PD house, and have begun to license their demos to certain houses only. To celebrate this, NBS (as one of the said houses) have sent me a pile of the Crusaders' back catalogue disks, and very impressive it is too. The old classics *Bacteria* and *Audio-X* were there, but also the newer demos *Bass-O-Matic* and *Tuff Enuff*. *Bass-O-Matic* is probably more what you'd call a music demo, but as well as the music on the two disks, you also have a selection of Calvin & Hobbes cartoons to read (if you don't know who they are then you should!) plus a little space invaders game. A very slick demo and very enjoyable.

Value for money...........10/10

The *Tuff Enuff* megademo comprises three sections: one short Calvin & Hobbes cartoon (yes, again!), then a piece of piano music plus a spinning globe, lovely samples well sequenced, with the keys played in time to the tune on the screen. The demo ends with the most eye-boggling filled vector text I've ever seen. A very professional and visually arresting piece of coding.

Value for money.............9/10

Enigma
17 Bit disk 913

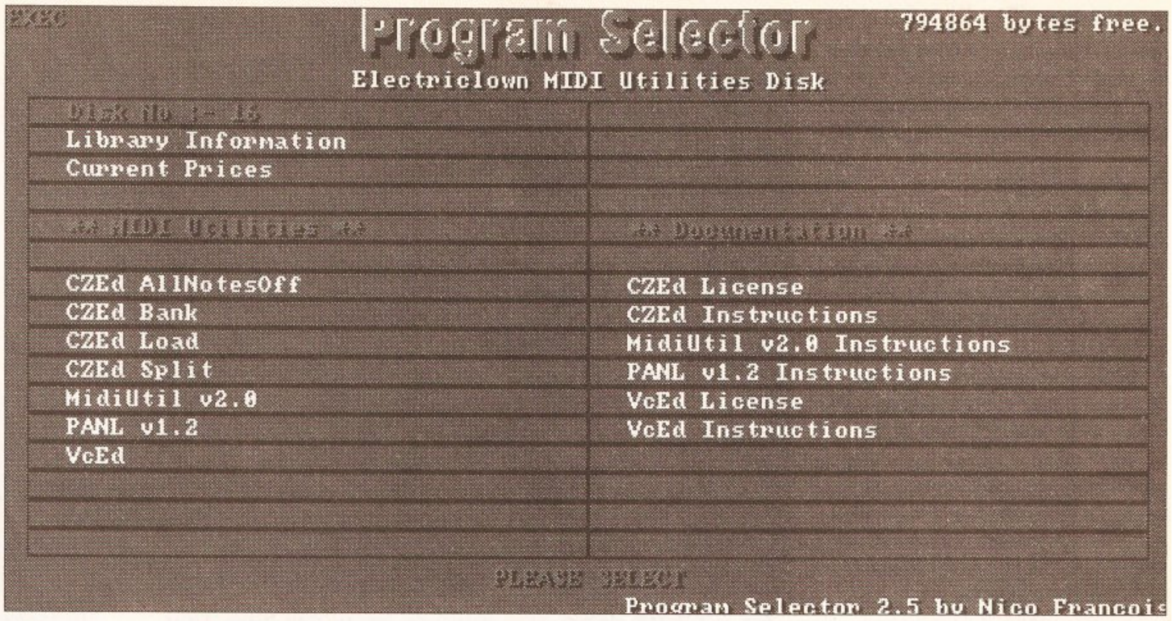
And finally, top of the heap is Phenomena's *Enigma* demo. Phenomena are Firefox and Tip (music), Azatoth (coding) and Uno (graphics). *Enigma* is a collection of very simple demos, very cleverly sequenced music and bags of surprises. First you get treated to a smooth starfield behind the titles, which seems to change direction as if you're spinning around in a very agile little space ship. Then the stars part to reveal a cube with a starfield on one plane and vector filled graphics on all the other faces. The cube spins and the faces animate at the same time. The effect is not unlike the kind of TV effects you get on a Quantel system. Then, while your head is still whizzing around from that, the team moves on to do a take off of the *Trip To Mars* demo of a few months ago, under the heading "and now a REAL trip to Mars". The vectors are clean and animate very realistically. The ground is a graduated copper list, and gives the effect of the ground fading away into the distance. Then, without a breath,

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the team moves on to do a similar vector demo, but this time the objects in the world are all light source-shaded. There follows a series of bouncing balls, and finally the end message is displayed, using what the team calls the Star Wars scroller, which scrolls away from you in perspective like the titles of *Star Wars*. Just when you think it's the end, Azatoth throws in a demo of his new PD ray-tracer program called *Perfect View*, and gives you a taste of what it can do with an animated ray traced picture. All in all, a fun packed and alarmingly clever demo, which bodes well for the future of this excellent team.

Value for money 10/10



Electriclown's *MIDI Utils* disk – great news for those of you with a MIDI interface for your Amiga.

APPLICATIONS

More fab programs you'd normally have to pay an arm and a leg for, but PD or shareware so you can spare your cash for better things. All the applications this month are from Electriclown.

Sozobon C Compiler

UL-22A & 22B

The Sozobon C Compiler is a fully featured C environment, which has spent a lot of time being updated over the last four years. I remember talking about it a number of years ago, and it didn't work very well at all back then. The main reason was that it had been ported over from the Atari ST. All the major problems (like not actually working) appear to have been ironed out in this new version, and you should find it quite easy to start writing C code with this package. All the parts of the program are there for you to use, and as PD programming languages go, Zc has had more work done to it than most.

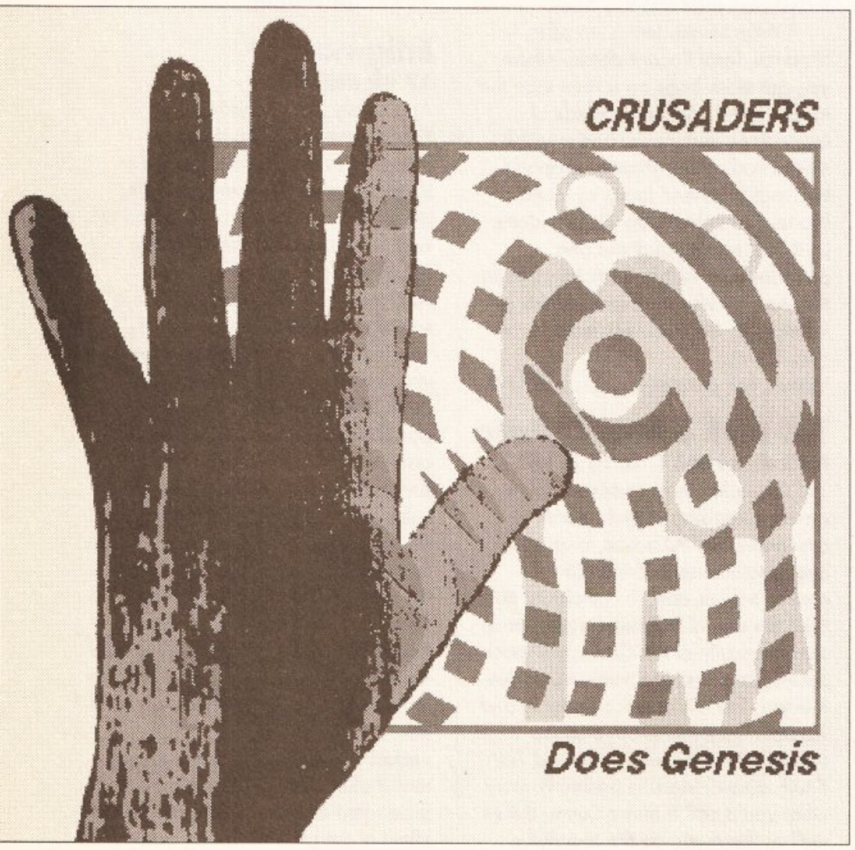
Value for money 6/10

Assembler Pack

Electric 20

The *Assembler Pack* gives you a suite of programs to use if you want to get into the world of assembly language programming. You get the *A68K* assembler by Charlie Heath, and the *Blink* linker program, plus *Textra* text editor, the *Mon* monitor program and the *Top* optimiser program. Not a beginners pack in itself, although working in tandem with a beginner's guide to assembly language programming it could help to give you a leg up to greatness. Who knows, you could be a demo programmer within a few months!

Value for money 8/10



***Crusaders Does Genesis* is a music demo fromthe Crusaders team, featuring tunes like *Mama* and *That's All*. And very good it is, too.**

Communications

Electric 3

The *Comms Pack* is a good starter if you want to break into the world of comms. Got a modem but nothing to drive it with? Well, here is a copy of *NComm* (as used by well seasoned, leathery old comms buffs like myself), plus a bunch of utils to help you along comms' lost highway. As well as *NComm*, which is all you really need, you get a number of bolt-on modules to do various tricky jobs like updating your phone list and call log and so on. Smart work.

Value for money..............9/10

Home Video

Electric 14

The *Home Video* pack is choc full of utils for the home video enthusiast. No, it's not a PD Video Toaster (although it won't be long before some German hacker comes up with that, I shouldn't wonder), but it does do titling and supplies you with a set of utils you will find useful if you like video. My favourite is *VTOT* (Video Tools On Tap), a set of resident tools which give you fade-outs and -ins, plus test patterns and screens to help you centre your screen and so on. Also good is *SportsText*, which enables you to put text on screen using a genlock at the touch of a button. Having pre-selected your text, you can flash it on to the screen when the need arises – you could display the name of a player or some statistics, for instance. Very clever stuff, which I'll be passing along to Gary Whiteley for a full test.

Value for money 9/10

Spreadsheets

Electric 5

Spreadsheets are a bit of a yawn really but they can be very useful, especially if you work for yourself, for doing your accounts and so on. On this disk you have a selection of things to work with, from the simple *Spread* and *SCalc*, right up to *Vc* and *VisiCalc* (not actually *VisiCalc* but a clone). Also included is a program called *CalcKey*, which is a pop-up calculator. All you do is press the [Alt] and = keys and the calculator appears on your screen.

Value for money 7/10

Databases

Electric 4

The *Databases* disk features *Database Wizard*, *Disc Cataloguer*, *DisSecretary*, and *Quickbase*. *Database Wizard* is essentially a mailing list program, although you can easily adapt it to hold any kind of information. *Disc Cataloguer* is a program which helps you keep your disks in order by filing the directories, as does *DisSecretary*. *Quickbase* is a short and sweet database designed to keep lists of family and friends/contacts, and can be launched just to check a name against an address and phone number. It's not the most complex package in the world, just quick'n'dirty, hence the name. Frankly I prefer *AmiBase II* as a PD database, but that's just my two penn'orth.

Value for money 6/10

continued on page 127

BLITTERCHIPS AMIGA PD

GAMES

78. The Holy Grail, a very good adventure
363. The Golden Fleece a text adventure (*)
418. Frantic Freddie the PD game, good fun
441. All new Psuedo Cop game, a Shoot em up
458. Castle of Doom, adventure with graphics
477. Return to earth, space combat/adventure
460. Flaschbier, a boulderdash PD game
551. Cluedo and Monopoly, 2 great games
552. Eat Mine, has 80 screens to play at
553. Retaliator and Pacman, 2 great games
555. Drip, a painter type of game, great fun
558. Murder, an adventure playable preview
559. Back to the Future, playable preview
562. Spaceblitz, 4 good games to play
644. Horror Zombies, a playable game preview
665. Killing Game Show, playable preview
668. Cybercon III, playable game demo
672. James Pond and Paradroid playable demos
699. Yelp, a Painter type game, multi-levels
900. Blizzard, fast scrolling shoot 'em up
1014. Chinese checkers, similar to solitaire

DEMOS

617. The Byte Busters Mega demo, good
807. Evil Dead demo, for all you Sycho's (*)
759. Amos Creator II demo, official release
751. Colour Cycling, superb effects get it!
750. Budbrain II a new disk from Budbrain
656. Pussy Inership, good graphics and game
655. Unreal game demo, to show off your Amiga
654. Olympia, parallax scrolling at its best
598. Fractal animation, super mandelbrots (*)
597. Cool Fridge, superb Plasma effects here
547. Materialized, cryptoburners superb demo
539. Chromium, a great new demo by Scoopex
516. Purple, very large vector routines
321. Fractal Flight animation, unusual demo
287. Golam Gates Mega demo II, worth getting.
132. Dragons demo 1, has lovely raster effects
174. Ian & Micks mega demo, 9 parts to this
982. Total Rebate, from the Steve Wright show
983. Total Retrial, from the Steve Wright show
984. Total Restyle, from the Steve Wright show
985. Total Respray, from the Steve Wright show
986. Total Recount, from the Steve Wright show

ANIMATIONS

43. Puggs in Space, a cute and funny demo
863. Iraq demo, rather comical animation
313. Revenge Horror Show, for psycho's only
394. Stamp Collector, an old but good demo
444. Fillet The Fish, similar to Puggs demo
631. Steves animations 1, has 8 cute anims.
632. Steves animations 2, has 6 cute anims.
789. Steves animations 3, has 6 cute anims.
790. Steves animations 4, has 5 cute anims.
791. Steves animations 5, has 6 cute anims.

The following animations all require 1 meg.

805. Franklin the Fly, hilarious and funny
763. Basketball player, superb ray tracing
866. Ami versus the Walker as reviewd
913. Mars, smooth space fighter animation
917. Juggette anim, and Juggette the revenge
633. Batman the movie, funny and amusing
625. Juggler II, the Juggler meets a lady
582. Stealthy II Manoevres, great cartoon
291. The Lotus Car chase from Agatron
865. Coyote Strikes back, poor Roadrunner
101. The very famous "Gymnast" demo
79. Education of Cool Cougar, very funny.

The demos below consist of 2 DISKS so each demo costs £1.98.. please remember

929. Maximum Overdrive, lots here & good
45. Kefrens mega demo 8, one of the best
66. Predators, great game to play as well
926. Mr Food, hilarious sample of record
199. Red Sectors, a must for demo collectors
201. RAF another of the classic demos
365. Budbrain, over 18 yrs for this, sorry
537. Monty Python's Secret Policemans Ball
614. Monty Python's Nudge Nudge, more humour
594. Hit the Road by.Flash, multi part demo.

AMOS LICENCEWARE

LPD1	Colouring book	LPD12	Hypnotic lands (*)
LPD2	Arc Angels maths	LPD13	Jigmania (*)
LPD4	Thingamajig	LPD14	Play it safe (*)
LPD5	Jungle Bungle (*)	LPD15	Angels shapes (*)
LPD6	Pukadu & Sprites	LPD16	Reversi II (*)
LPD7	4 Way Link (*)	LPD17	Dog fight II (*)
LPD8	Learn & Play (*)	LPD18	Touchstones (*)
LPD9	Amos Assembler V1	LPD19	X-IT-50
LPD10	Word Factory (*)	LPD20	Wordy
LPD11	Go Getter Game (*)	LPD21	Quingo (*)

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758. Yabba Dabba Doo, great cartoon pictures
667. Future Visions, more fantasy pictures
480. Saucy postcards, naughty but nice
474. Madonna Slideshow, lots of pictures
472. Viz slideshow as seen in Amiga Format
112. Space Bubbles, terrific fantasy pics
739. Slideshow Spectacular, superb hi-res.
904. Countach fantasy slideshow 1
905. Countach fantasy slideshow 2
991. Belinda Carlisle slideshow, great pics

MUSIC

796. Crusaders does Genesis, superb (*)
794. In a Silent Way, don't miss this disk!
980. Jarre Live, eleven good tracks of music
770. Arcane Music, 11 tracks for you to play
767. The 900/Oxygen remix, collect it now (*)
978. Give Me What I Want, Sam Fox sample
723. Sounds of DOB II, 17 tracks of music (*)
970. If only I could, Sidney Youngblood sample
718. Revolutions by Jean Michelle Jarre
848. A kind of magic, by Queen. Sampled (*)
716. Bomb the Base, 8 fab tracks to listen to
703. 808 remixes from the Beatmaster who else?

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735. Flexi Base, a more friendly data base
843. Iconmania, a disk full of Icon utils.
640. Mobed V1.0, a movable object editor
623. C-Light, ray tracing program very good
613. Soundtracker Professional (Protracker)
993. Master Virus Killer V2.1, terrific!!
877. NORTH C V1.3 a 2 disk set £1.98
898. Audio Magic V1.1 full of utilities

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301. Darkstar's music 9, 14 great tunes
417. Electric Youth by Debbie Gibson, great!
420. Lumberjack song from Monty Python
478. Made In Heaven by Kylie, a full 6 mins!
525. Flash by Queen, a great two disk set
968. Followin you, by Madonna great song
581. D-Mob music 4, 2 disks of good music

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U521 Sample Scanner
U539 Sound Applications x2 disks
U549 Bootlock Utilities
U512 PCB Designer
U562 SID Workbench Replacement
U575 CLI Utilities
U607 Ultimate Icon Editor - inc. Lots of Clip Art Icons
U550 Master Virus Killer
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U507 Workbench Multi Util Disk
U534 Digitech Utils
U501 Complete Boot Disk
U557 Q-Base/Visicalc
U586 N-Cad
U548 Giant Utils Disk
U578 Cruser Basic Compiler
U587 Assisins Graffix Utils
U606 D Copy
U571 TV Applications x2
U528 Video Applications x2
U602 Disk Immune System - Guards Against Virus
AU 602 Full Clip Art Collection x20 Disks Various AU 802

BUSINESS

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B206 Clerk Accounts
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B256 Journal - For your Accounts
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B230 Bank Master - For your Bank Accounts
B258 Wordprocessor
B295 Business Card - Make yours now
B248 Analyticalc Spreadsheet
B290 Visicalc Spreadsheet
B216 Wordwrite/Amigaspell
B220 Appointment Calendar
B271 House Hold Inventory
B241 Textplus
B280 Hyperbase
B297 Home Business Pack Vol. 1-8
B285 Pagesetter - Very Good Program x3 Disks, 1 Meg
B236 Rim Database - Quite Complex. 1 Meg for good results.

MUSIC

MD970 D-Mob Music 3
MD991 Tiffany - I Think We're Alone Now
MD996 Dance Mix Vol.1
MD982 Digital Concert 1-6
MD990 Blues Brothers
MD950 Limited Edition - Dance Mixes 1-3
MD969 Michael Jackson - Bad
MD957 Sun Sounds of The Summer
MD997 Madonna - Hanky Panky
MD975 Groove Is In The Heart
MD978 C.D. on a disk
MD985 The Winkers Song - Ivor Bigun
MD964 Inner City - Multi Trax 1
MD966 Depeche Mode
MD987 Total Remix
MD995 Dirty Dancing
MD961 Banging Raves No.1
MD932 Music Maestro
MD929 Beatmaster 3
MD917 Technotronic Remixes
MD973 Jesus Loves Acid
MD910 A Journey Into Sound
MD951 Revolution Music Demo
MD980 Crusaders Project Beat
MD952 Rebels - Snap
MD949 Madonna - Justify My Love
MD900 Panic Sounds Of Energy
MD919 UGA Music - 10 Different Tracks Inc. Michael Jackson
MD801 Enigma - 1 Meg
MD803 Another Day In Paradise... Thanks Phil.
MD804 Poison
MD805 It's Mental
MD808 Pet Shop Boys
MD275 Jarre Docklands
MD898 Snap - The Power
MD800 Doom Music 28

MUSIC UTILITIES

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MU007 Med Music Creator
MU092 Noisetracker 1.2 Plus Utils
MU028 Mega Instruments Disk
MU238 Soundtracker Modules
MU367 Music Editor
MU087 Soundtracker Boot Disk
MU310 Instruments 2 - 10 Various
MU072 Soundtracker Mega System
MU126 Music Creator
MU399 Future Composer
MU370 Protracker V2.2
MU004 Ripped to Shreds - Full of music rippers
MU401 D.J Samples 1, 2, & 3
MU539 Sound Applications
MU156 Sample ST-01 - ST-99...Full range of ST samples & modules. Too many to list, full description on catalogue disk.

GAMES & DEMOS

DG700 Treasure Island
DG725 Blizzard
DG777 Paranoid
DG742 Learn Play 1 & 2 - For Children
DG799 Starfleet
DG726 Castle of Doom - This is good
DG766 Computor Conflict
DG710 Lady Bug
DG746 Psuedo Cop - Similar to Robocop
DG791 The Evil Dead - Gory playable demo
DG785 Startrek - The Next Generation x2 All new
DG729 Startrek - The Final Frontier x2 USA version
DG747 Boing...Shut Up
DG794 Collosal Adventure - World Adventure..Text
DG715 Pipeline
DG761 Battleforce
DG730 Frantic Freddie - Mad & Fast
DG751 Arcadia
DG777 Holy Grail Adventure..Text
DG732 Golden Fleece
DG720 Grave Wars
DG782 Dynamite Dick
DG737 Return to Earth - Space Game
DG762 Games Galore Vol. 1-7, Various
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continued from page 124

MUSIC

Sweet Music

NBS L610

Music demos continue to proliferate in the PD world, with the most intriguing coming from Crusaders. And why not, since that is how the team made its name originally. Two spring to mind this month: the *Crusaders Does Genesis* demo and *Sweet Music*.

Sweet Music is a single disk with a mere seven tunes, and is very easy on the ear, although there's nothing really original. So a mere...

Value for money 5/10

Genesis

NBS M231

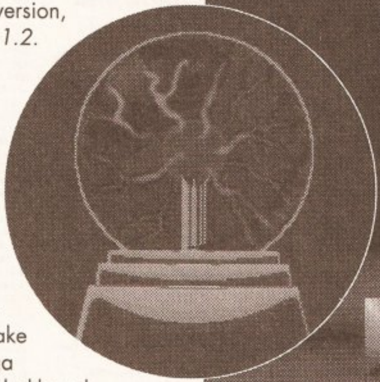
What really did impress me were the Genesis tunes on *Crusaders Does Genesis*. Mostly, music disks fall into one of two categories: dance music or dance music. Sometimes there's even some dance music. But here is a successful attempt to try something very different, and that is to emulate those popular old hippies, Genesis, and provide a full rendition of a selection of big G tunes. The tunes in question are *Mama*, *Afterglow*, *Abacab*, *That's All* and *Entangled*. The tunes are very lifelike cover versions, and each tune is accompanied by a small animation of the band live, a different anim for each tune. Very impressive, and no matter what you think of the music (I quite like it, being a bit of an old hippy myself), you have to respect the skill and originality of the demo.

Value for money 8/10

Musical Creators

Electriclown 17

On the technical side of music we have the *Music Creators* collection, which has just three programs; but what programs! Two versions of *Soundtracker*, version 2.5 and the eight-channel version, plus *Noisetracker 1.2*. You will need the sample disks, or make your own using the *PLSTED* program, but this won't stand in the way of the dedicated tracker. *Soundtrackers* are the best way to make music on the Amiga using samples, and although *MED* and *OctaMED* are better, this is still a very worthy collection.



Value for money 7/10



Although slightly limited in terms of what you actually *do* with it, the images from *Demons Slideshow* are certainly impressive.

MIDI Utils

Electriclown 16

The *MIDI Utils* disk is only any good if you have a MIDI interface and a synthesiser. The programs are all about the Casio CZ-101, except one for the Yamaha DS55, so you'll need to have either one of these plugged in if you want to get a taste of these programs. The CZ end is particularly good, giving you an editor program, plus a means of saving the banks of sound in and out. There are plenty of sounds supplied on the disk, so you can easily experiment with new sounds.

Value for money 8/10

GRAPHICS

Clip Art

17 Bit 954-959

The 17 Bit clips look as though they are grabbed from PC or Mac clip art disks, as the pictures are obviously fuzzy grabs from black-and-white clips. Why they are so fuzzy I don't know, but the effect is not too pronounced, and in a DTP document they don't look too bad. On screen they look a little odd, but that's to do with the strange anti-aliased edges you get on the sharp corners. There are too many graphics for me to look at all six disks, but I tried to check out as many as I could, and they cover a very wide range of subjects. Clever stuff, and good value.

Value for money 7/10

Demons Slideshow

Crazy Joe's 1561

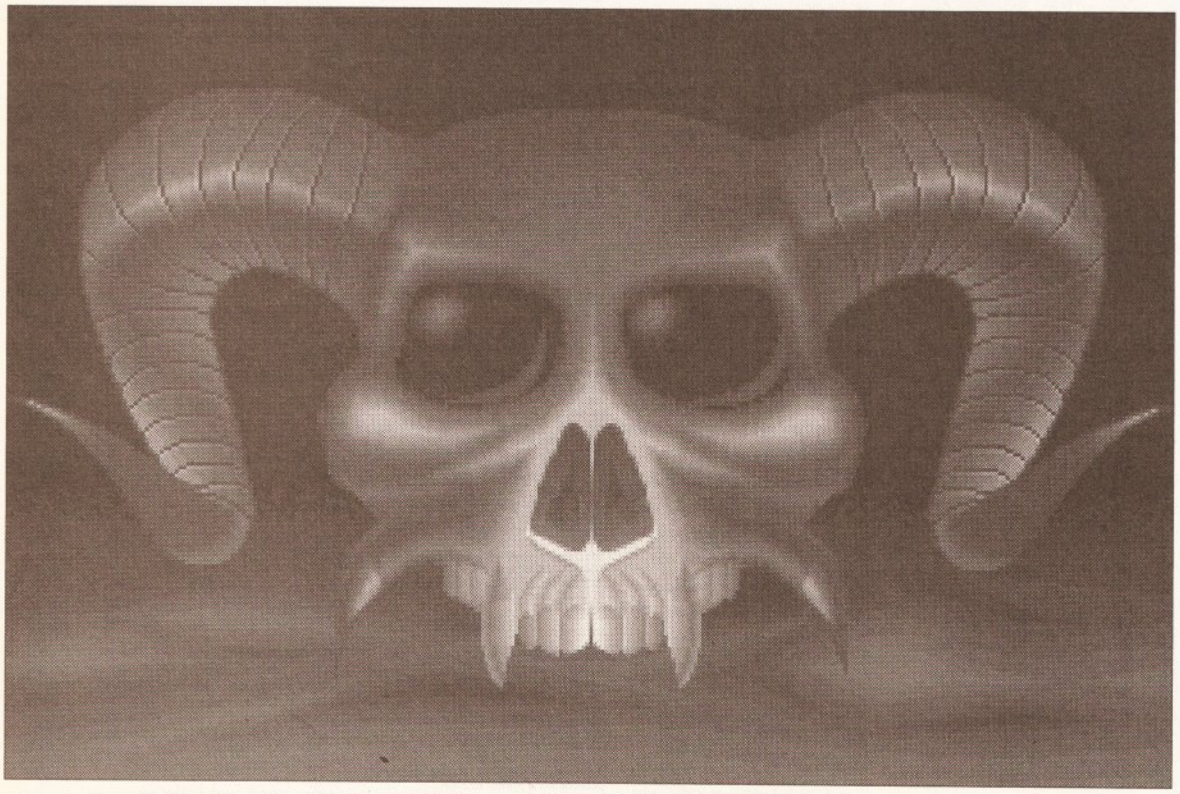
The *Demons Slideshow* is a good piece of kit, with some very good graphics, although some are a bit on the ropy side. By and large it's an impressive display, but it's only any real use if you can grab out any of the frames and examine/steal/edit them for your own purposes. If that's not your leaning then the show is bound to pall after the first couple of viewings. My favourites from the collection are the *Robocop 2* picture, and the huge gold skull with horns (shown on the left).

Value for money 4/10

DISK MAGAZINES

The Crusaders are a well known demo team, but what you may not realise is that they are also the publishers of the Eurochart disk magazine. The Jan 91 and May 91 issues of the chart were sent to me by NBS, disks D240 and L614 respectively. The trick with the chart is that you, and every other demo collector in Europe, vote for your

continued on page 129



Here's one to frighten the kiddies with. Yet another offering from the *Demons Slideshow* disk, this one's more a scream shot than a screen shot. (*You're fired – Ed.*)

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647 HYSTERESIS Incredible vector demo, one of the best we have seen
693 PHENOMENA - INTERSPACE As reviewed in Amiga format July Issue
707 PHENOMENA ENIGMA Totally Amazing demo with a filled vector trip
723 SHINING VECTOR EXTERMINATOR Incredible new effects never seen before
760 REBELS BOMBASTIC DEMO Very impressive 3D Scroller plus good music.
764 KREST DEMOS Nine very good demos, with a nice one by Demo Television.

MUSIC

107 THE VANGELIS DEMO Spectacular Audio visual Demo, Fantastic Music
133 CRUSADERS BACTERIA Best selling music disk 8 Superb tunes by Dr.Awesome
145 THE SOUNDS OF GNOME An oldy but Still popular even now, 46 songs
218 KEFRENS JUKEBOX Very well presented music disk with some pumpin tracks
219 TECHNOTRONIX REMIXES Pump up the Jam and Get Up. They even sing it !
223 DIGITAL CONCERT 3 A superb remix of house music 12 minutes of it !
225 DIGITAL CONCERT 5 The Power, Touch Me, Kaos, and Keep Bustin. BRILL
424 SOUND OF SILENTS A Chart topping Music disk. Eight Brilliant songs
425 DIGITAL CONCERT 6 Another in the series of Kickin' house remixes
532 CRUSADERS A few tunes .... Brill, just Brill, and more Brill ....
562 MANIACS OF NOISE Very Very impressive music from Hollands BEST Musicmen
608 GENESIS PROJECT Five Great Genesis songs covered by Crusaders. 1 Meg
621 BANGING RAVES 2 Strictly for ravers, without a doubt! Mix by DJ Sonix
628 AMIGADEUS CLASSIC MUSIC Mozart meets the Amiga. Very well composed
650 MUSIC DREAMS Twenty Fantabulous songs by Twins of Phenomena. Get it
672 - 673 SILENTS BLUES HOUSE MUSIC A This is a great music disk with lots of brill tunes plus a great lander game. Get it !
710 TURRICAN 2 MUSIC DISK Fabulous music from the game of the same name.
721 GROOVE IS IN THE HEART Remix of the chart topping song by Deelite
724 DESTINATION DOCKLANDS MUSIC Music from the Jarre concerts .
755 NIGHTSHADE MEGAMUSIC 3 Superb tracks by Nightshade. Very good
757 BLAH BLAH EXTRA Lots of mega Chris Huelsbeck music crammed on one disk.

ANIMS & PICS

106 EL-GATO ANIMATION Raved about animation of a spinning, walking cat. 1 meg
112 CX1 SPACESHIP Glass globe Animation of a spaceship zooming around. 1 Meg.
137 - 138 SILENTS SLIDES This is really good some excellent pics from calenders of girls and fantasy art.
139 REAL 3D SLIDESHOW Some amazing 3D sculpted pictures done in Real 3D
158 AGATRON SLIDESHOW 6 Superb Star Trek pics by T.Richter in HAM
172 GLAMOUR PICS Collection of glamour pics digitised. (18)
175 - 176 NEWTEK DEMO REEL 3 This needs 1 Meg and 2 Drives, but its MEGA
184 MADONNA Nude slideshow of Maddonna when she was younger. All in B/W
191 FORGOTTON REALMS Slideshow by Fraxion of Myhological Hobbit worlds
192 THE WALKER DEMO The Walker attacking the helicopter. 1 Meg
198 THE RUN Car chase animation by Tobia Richter. Very good. 1 Meg
205 AGATRON SLIDESHOW 8 More incredible pictures by the fab Tobia Richter
206 NEWTONS CRADLE Animation, plus Jet fighter and Rocking Chair. V.Good
207 LUXO TEENAGER Animation a father and son Anglepoise lamp. Funny. 1 Meg
212 STAR TREK ANIMATIONS Five superb pieces of Ray traced animation
398 FRACTAL FLIGHT Hypercube calculated flight through a valley. 1 Meg
453 EPIC PREVIEW Preview of the game. If its this good then Buy it.
454 NIGHTBREED SLIDES Yukky slides from the horror movie spooky music
455 CAR,LOTUS,JET Three Great animations by Tobia Richter
456 STEALTHY ANIMATION Cartoony animation
457 SPACESHIP Animation of a huge ship spinning around in space. 1 Meg
458 STAR TREK MANEUVERES Superb Animation of the Enterprise. 1 Meg
474 SPACECHASE Animation of a spaceship being chased down a tunnel. 1 Meg
508 BUSY BEE Loopy animation of a crazy bee. Needs 1 Meg
575 - 576 - 578 LOST IN SPACE Animation of the TV program. 2 MB
578 - 579 - 580 STATION AT KHARN Superb Space city animation. 2MB
623 BATMAN MOVIE Neat cartoon animaton of Batman and the Joker. 1 Meg
625 NASA SLIDES 2 Slideshow of pictures of The Earth, Shuttle, etc.
627 DEMONS SLIDES 3 Some very impressive artwork by C-Dryk of demons
634 MINER Excellent sculpt ray-traced animation. 1 Meg
654 RELIANT ATTACK Animation of the Enterprise being attacked. 1 Meg
655 HUEY 2 Animation of a helicopter leaving a landing pad. 1 Meg
666 STAR TREK PINGPONG Flyby animation of two starships, Rather good. 1Meg
667 - 668 LIGHT CYCLES A The light cycles sequence from the film Tron 1MB
685 ADVANCE HAM PICS Stunning pictures with a nice funky music beat
699 AGATRON Eight unbelievable picutres of Space stations and ships
700 AGATRON ANIMS More excellent Quality Animations from T.Richter *
708 DYNAMIC HAM PICTURES Incredible pictures in 4096 colors 640x512
756 NEXT PIXILIUM Collection of Dpaint drawn pics with music to back. Good

GAMES

156 - 157 ALL NEW STAR TREK Take to the controls of the USS Enterprise
277 BOARD GAMES Collection of games Mastermind,Othello,Reversi. Tryclop
283 PSEUDO COP Shoot Em Up based around the ED-209 Character from robocop
446 BIONIX Impressive intro to a good game, difficult in parts
448 PACMAN Maze game where you must eat dots and avoid ghosts. A Classic
471 ST BASH Space invader clone, taking the mick out of the Atari ST
472 ED-209 Shoot out game, blast dogs, Batman, Turtles. Language may offend.
509 LEARN AND PLAY 1 Blackboard Maths, colorpad, Worm, Cat&Mouse, Shark
510 LEARN AND PLAY 2 StepStone, Wheel of Fortune, Flower, Puppy, Tug, SpellQuiz
571 TREASURE ISLAND Game for Kids, help the pirate find that treasure
595 BOARD,CARD,ARCADE GAMES Ratmaz, Daleks, Yatzee, Jigsaw, Cosmoriods2, Ameoba
596 COLOSSAL ADVENTURE Text adventure, also World Adventure
598 BATTLE FORCE Strategy war game against robots. Very Detailed
638 3D TETRIS Imagine a 3D version of tetris .. well this is it, very hard.
639 MOIRA Text Adventure based around the dungeons and dragons theme
669 SUBCULTURE Nice Shoot Em Up, Only 1 level but you can buy the full game
674 GAMES GALORE 1 Drip, tiles, Quix, O&X's, Ameba, Chess, Yatzee, Othello
675 GAMES GALORE 2 Welltix, Skyfight, Bouncer, Jackland, LArn, Bluemoon
676 GAMES GALORE 3 Gravatak, Asteroids, PingPong, MiniBlast, Orbit3D
677 GAMES GALORE 4 Mr Munk, Backgammon, Diplomacy, Car, Mutant, Chess, EygyptRun
678 GAMES GALORE 5 Cosmo, Cat&Mouse, Mazeman, Rollon, Trivia, Pharoah
679 GAMES GALORE 6 Tint, Jumpy, Def, ATC, C-Robots, 5inLine, King, Rats, SB
689 7 TILES What a great game ! Cross between Speedball and Kick Off
701 - 702 US STAR TREK A Strategy game where you pilot the USS Enterprise
703 WACKO IN WONDERLAND Fantastic preview of a new game. Very good
761 PD GAMES Tanx, Rollerpede, Cave Runner and Amigoids. All superb games.
762 - 763 NETHACK DISK A Dungeons and Dragons game and adventure.

AMOS TITLES

The disks in this next section are NOT PD but are licensed to us by the AMOS PD LIBRARY. All AMOS disks are £3.50 each and a proportion of this is given to the author as royalties. These disks are not allowed as free disks. Please note most titles require 1 Meg.

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Hi Amigafreaks ! Hope you like this months Advert done on the Amiga in ProPage2 by Me. Greetings flying out to NBS, Vally, Goldstar, Virus Free, Blitterchips, Mole, 4-Mat, Dan, Kris, Telebug, Nick, Red Devil, Saga, Dave, Mark, Lee, Charli, Sue, all our customers and anyone we know !

START COMPUTER SYSTEMS ARE IN NO WAY ASSOCIATED WITH SCS OF WASHINGTON.

continued from page 127

favourite stuff, like records and magazines, videos and movies, and the Crusaders code the results into a flashy and informative demo/magazine. There's all kinds of interesting menu and file reader structures in the thing,not to mention a range of facts and figures that boggles the mind. Strange how fickle the European public is, too. Fascinating reading, and personally I can't wait until the next chart comes out in the autumn.

Value for money 7/10

GAMES

And finally, the leisure end of the market. I told you about the neat games on the Fish CD, but how about those on more general release? Electriclown disk 7 and 17 Bit disk 971 may have the answer.

Game Disk 1

Electriclown 7

Game Disk 1 has a version of *Breakout*, or *Arkanoid*, plus a car racing game not unlike a slot car race, and the *Drip* game which is a sort of *Pacman*-type thing. *Drip* is excellent, and deserves high praise for its professional polish. And it makes a change from the interminable *TRON* light cycle games!

Value for money............5/10

Mental Image

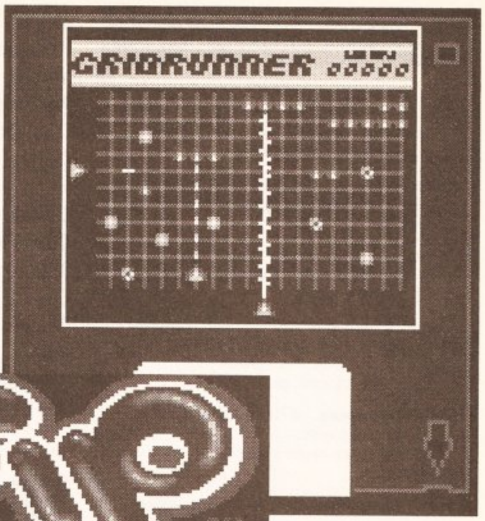
17 Bit 971

Speaking of professional, this 17 Bit disk has a trio of extremely professional games on it. The Mental Image crew have come up with three arcade-quality games. At the beginning of the disk is a fake NOVALOAD sequence, a sound and sight familiar to you if you came to the Amiga via the C64. And so are the games, as they are *Gridrunner*, a clone of an old Jeff Minter game, *Invaders* , a *Defender* clone, and *Rebound*, a *Breakout* clone. The games on this disk are much more appealing, and very commercial looking. No-one would know you got the games for free (unless they read this column!).

Value for money............9/10

It's goodbye from me

If you have any questions about PD, then why not drop me line at PD, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Or why not e-mail me on Prestel (219997854), Telecom Gold (74:mik2077), The Direct Connection (uad1135@dircon.co.uk) or CIX (snouty@cix.co.uk). AS



Those who started their computing on a Commodore C64 will find *Gridrunner* (right) familiar: it's a clone of Jeff Minter's game from many years ago.



Of course, we don't play any games ourselves. But we're told that those who do rave about *Drip*, from Electriclown. You'll find it on *Game Disk 1*, which also contains a version of *Breakout*, called *Arkanoid*.

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EDITORIAL

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Don't miss out on issue five of *Amiga Shopper*. Every serious Amiga user in the country is trying to get their hands on this magazine and you don't want them to beat you to it. Over 100,000 *Amiga Format* readers saw the special preview issue and the first few issues sold out virtually instantly in many places. So, to guarantee your copy, either;

● Make sure you remember to rush into your local newsagent and buy it on the morning of Thursday August 1.

● Fill in this form and give it to your friendly neighbourhood newsagent, who will make sure that it is reserved for you or even delivered to you. (Did you know that W H Smith and John Menzies will also save a copy of ***AMIGA SHOPPER*** for you?)

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NEXT MONTH

We've got a sparkling issue in the pipeline for next month's Amiga Shopper, due out in just four short weeks time.

Reviews already lined up for the next issue include Canon's remarkable bubblejet printer, a look at some freezer cartridges and the second part of our Superbase 4 review.

We take a look at sound sampling in the music column, and check out some of the best devices.

Also in the next issue, we return to hard drives to check out the new models which weren't available in our first look, and see how they compare to the ones we tested in issue 1.

And of course you will find all the regulars: comms, AMOS, video, DTP, graphics, AmigaDOS, programming, education, business, music: the combination which makes *Amiga Shopper* the best value Amiga magazine you can buy

In your newsagents on Thursday August 1, only 99p. You can't afford to miss it.

ADVERTISERS INDEX

HiSoft BASIC

A BASIC Standard

HiSoft BASIC is the answer to your programming prayers; a fast, interactive and easy-to-use 68000 BASIC system conforming to the industry standard for the BASIC language.

HiSoft BASIC is designed to be as compatible as possible with the AmigaBASIC interpreter, while offering you a friendlier, easier-to-use and infinitely more powerful language. In addition it has many of the features of the world-standard Microsoft QuickBASIC, on the PC.

Some of HiSoft BASIC's features include:

- *Structured programming, using long IFs, multi-line functions, CASE, REPEAT and procedures*
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- *Variable size limited only by memory*
- *Integer and character constants*
- *Compiles the majority of AmigaBASIC programs without change*

Full support of the Amiga is included as standard with extensive window, screen and graphics commands. Amiga libraries can also be accessed as if they were built-in statements allowing complete machine access.

HiSoft BASIC includes full MENU support, with event trapping and powerful sprite routines, using the OBJECT keywords.

Programs can execute in their own window(s) or use the CLI window for minimum size. CLI-type programs may be easily written and made resident since they are fully re-entrant.

HiSoft BASIC is a no-limits language; string variables may be up to 16Mbytes in length and there are no limits on array sizes either (subject to available memory). Code generated is fully 68010/020/030 compatible.

Compiled programs have no run-time overhead; all compiled programs share an Amiga library. which may be distributed with programs without charge.

Extend

An add-on package for HiSoft BASIC, Extend includes routines for handling IFF files, gadgets, sub-menus, sound, HAM mode and much more. It is supplied as a library for ease of use.

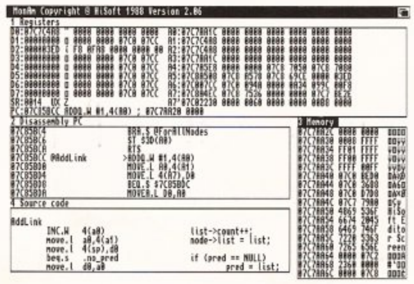
Normally HiSoft BASIC costs £79.95 and Extend costs £24.95 … but see the coupon below for a very special offer for the two packages together!

Devpac 2



Easy Assembly Language

Devpac Amiga Version 2 is widely regarded as the most powerful, complete, assembly language development system for the Amiga. It incorporates an integrated editor/assembler/linker/debugger, together with a stand-alone assembler and debugger and all the necessary include files and many examples.

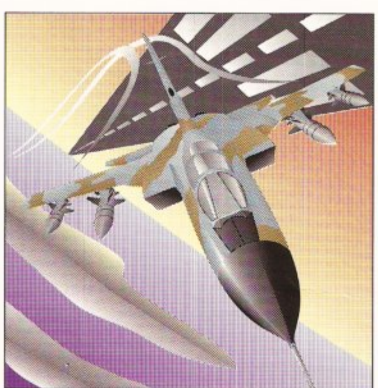


Complete with extensive ring-bound manual detailing all aspects of the package, plus debugging strategies, Devpac is *the* choice for beginners and assembler experts alike.

RRP is £59.95, but see the coupon below for a very special offer on this essential package.

ProFlight takes off!

ProFlight, the extremely accurate and flyable Tornado flight simulator from HiSoft, is *now* available for all the Amiga computers.



First released on the Atari ST where it has won a high degree of critical acclaim from reviewers and users alike, ProFlight is not only one of the most technically realistic simulators around but it is also tremendous fun to fly. As you would expect, the Amiga version has much improved sound and graphics!

You can fly peaceful reconnaissance missions or roar into attack after carefully planning your combat mission. ProFlight is supplied with a comprehensive, ring-bound flight manual.

SAS C5

SAS Institute (the parent company of Lattice Inc.) has taken over the development and sales of the Lattice C 5 compiler for the Amiga and released a new version, 5.10a.

The major features of this latest version are:

AmigaDOS 2.0 support, LSE AREXX support, improved Workbench usage, many performance improvements, support of _aligned, automatic near to far conversion, C++-style comments, compile/link options now read from an environment variable … and more.

We believe that these improvements and enhancements in this version establish SAS C5 as the ultimate Amiga C compiler. The package includes 680x0 compiler, linker, screen editor, assembler, highly intelligent global optimiser, source level debugger, code profiler, librarian and a host of tools and examples.

SAS C5 from HiSoft costs £229 (but see our special offer on the coupon) and includes full UK technical support, which is not available from other sources.

Upgrades cost £34.95 (from version 5.0x), £79 (from version 4.xx) or £99 (from version 3.xx).

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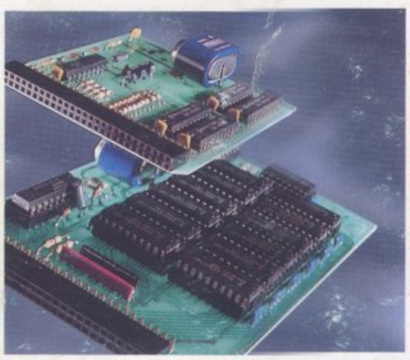
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Access

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All prices include VAT and are subject to change

